संस्कृत-
संजीवनी

द्वितीयो भागः

द्वादशवर्गीय संस्कृतस्य पाठ्यपुस्तकम्

सम्पादक

कमलाकान्त मिश्र

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

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पुरोवाक्

भारतीयशिक्षापद्धतौ संस्कृतस्य महत्त्वमुद्दिश्य विद्यालयेषु संस्कृतशिक्षणार्थम् आदर्शपाठ्यक्रम-पाठ्यपुस्तकादिसामग्रीविकासक्रमे राष्ट्रियशैक्षिकानुसंधान-प्रशिक्षणपरिषदः सामाजिकविज्ञानमानविकीशिक्षाविभागेन षष्ठवर्गादारभ्य द्वादशकक्षापर्यन्तं नवीनराष्ट्रियपाठ्यचर्यानुरूपम् आदर्शपाठ्यक्रमं निर्माय संस्कृतपाठ्यपुस्तकानि निर्मीयन्ते। अस्मिन्नेव क्रमे द्वादशवर्गीयच्छात्राणां कृते प्रमुखेभ्यः गद्य-पद्य-नाटक-ग्रन्थेभ्यः प्रतिनिधिभूतान् पाठ्यांशान् सङ्कलय्य भूमिका-टिप्पणी-प्रश्नाभ्यासादिभिः समलङ्कृत्य प्रकाश्यतेऽधुना **संस्कृत-संजीवनी (द्वितीयो भागः)** नाम पाठ्यपुस्तकम्। छात्राणां सौकर्याय पूर्वनिर्धारितानां गद्य-पद्य-नाटकानां कृते त्रयाणां पुस्तकानां स्थाने साम्प्रतमेकमेव पुस्तकमिदं विरचितम्। अत्र संस्कृतसाहित्यस्य विविधविधानां गद्य-पद्य-नाटकानां परिचयप्रदानेन सह छात्रेषु नैतिकमूल्य-विकासाय अपि प्रयत्नो विहितः।

पुस्तकस्यास्य प्रणयने यैः विशेषज्ञैः अनुभविभिः अध्यापकैश्च बहुमूल्यं परामर्शादिकं दत्वा सहयोगः कृतः, तान् सकलान् प्रति परिषदियं कृतज्ञतां प्रकटयति। पुस्तकमिदं छात्राणां कृते उपयुक्ततरं विधातुं सर्वेषामनुभविनां विदुषां शिक्षकाणां च सत्परामर्शाः सदैवास्माकं स्वागतार्हाः।

जगमोहनसिंहराजपूतः
निदेशकः
राष्ट्रियशैक्षिकानुसंधानप्रशिक्षणपरिषद्

नवदेहली
नवम्बर, 2002

भूमिका

संस्कृत विश्व की अत्यंत प्राचीन भाषा है। भारतीय संस्कृति का स्रोत यही भाषा है। इसमें न केवल हमारे प्राचीन उदात्त संस्कार निहित हैं, अपितु हमारा गंभीर शास्त्र-ज्ञान एवं पारलौकिक चिंतन भी इसी भाषा में उपलब्ध है। ज्ञान-विज्ञान के क्षेत्र में जितने ग्रंथ इस भाषा में लिखे गए हैं, उतने विश्व की अन्य किसी भी प्राचीन भाषा में नहीं मिलते। संस्कृत का साहित्य ऋग्वेद काल से लेकर आज तक अबाध गति से प्रवाहित होता रहा है। वेद, व्याकरण, ज्योतिष, छंद, निर्वचनशास्त्र, अर्थशास्त्र, राजनीति, ज्यामिति, षड्दर्शन आदि के साथ-साथ यह साहित्य कोमल काव्यानुभूतियों से ओत-प्रोत गद्य-पद्य की उर्वर जन्मभूमि है।

संस्कृत भाषा ने समस्त भारत की आधुनिक भाषाओं को प्रत्यक्ष अथवा परोक्ष रूप से पर्याप्त प्रभावित किया है। मध्यकाल में प्राकृत तथा अपभ्रंश साहित्य को तो संस्कृत के बिना समझ पाना बहुत कठिन था। आधुनिक भारतीय साहित्य का अधिकांश भाग संस्कृत साहित्य की ही देन है। आधुनिक भारत की लगभग सभी भाषाओं ने संस्कृत भाषा से ही शब्दावली ग्रहण की है। विदेशों में भी संस्कृत की महत्ता बड़े आदर से स्वीकृत की गई है। विश्व के अनेक विश्वविद्यालयों में संस्कृत भाषा का सम्यक् अनुशीलन हो रहा है।

राष्ट्रीय एकता की दृष्टि से संस्कृत का बहुत महत्त्व है। यद्यपि भारतवर्ष में क्षेत्रीय विषमताएँ एवं विविधताएँ अनंत हैं, तो भी जिन तत्त्वों का इस देश को एक सूत्र में बाँधे रखने में सर्वाधिक योगदान है, उनमें संस्कृत भाषा तथा इसका साहित्य प्रमुख है। पुराणों में भारत के समस्त भूगोल को इस रूप में चित्रित किया गया है कि उसे पढ़कर प्रत्येक भारतीय के मन में अपने देश के प्रति अगाध आस्था एवं श्रद्धा

स्वतः ही उत्पन्न हो जाती है। संस्कृत साहित्य की मूल चेतना समूचे भारतवर्ष को एक राष्ट्र के रूप में देखने की रही है। इतना ही नहीं, **'वसुधैव कुटुम्बकम्'** (सारी पृथ्वी ही हमारा परिवार है) अथवा **'कृण्वन्तो विश्वमार्यम्'** (हम सारे विश्व को श्रेष्ठ बनाएँ) जैसी मर्मस्पर्शी उक्तियाँ मानव मात्र के प्रति आत्मीयता के भाव व्यक्त करती हैं।

वेद सारे विश्व का प्राचीनतम वाङ्मय माना जाता है। भारतीय संस्कृति के इतिहास में वेदों का स्थान नितांत महत्त्वपूर्ण है। इन्हीं की दृढ़ आधार-शिला पर भारतीय धर्म एवं संस्कृति का भव्य प्रासाद प्रतिष्ठित है। भारतीयों के आचार-विचार, रहन-सहन, धर्म-कर्म आदि के रहस्यों को भलीभाँति जानने के लिए वेदों का ज्ञान परमावश्यक है। भारतीय समाज में वेद की प्रतिष्ठा सर्वाधिक है। भारतीय परंपरा में पवित्र ज्ञानराशि वेद को अपौरुषेय (मनुष्य द्वारा अरचित) तथा शाश्वत माना गया है। *बृहदारण्यक उपनिषद्* में वेदों को परमेश्वर का निःश्वास कहा गया है। भारतीयों का यह अगाध विश्वास है कि सृष्टि की उत्पत्ति के साथ ही वेदों का भी चिरंतन ज्ञान ऋषियों-महर्षियों को स्वतः स्फुरित होता गया। किंतु भारतीय परंपरा के विपरीत पाश्चात्य विद्वानों ने वेदों का रचनाकाल निश्चित करने के अथक प्रयास किए हैं। प्रो. मैक्समूलर ने वेदमंत्रों की रचना 1200 वर्ष ई.पू., प्रो. विण्टरनिट्स ने 2000 वर्ष ई. पू. तथा प्रो. जैकोबी ने कृत्तिका नक्षत्रों की वैदिक स्थिति के आधार पर वेदमंत्रों की रचना 4500 वर्ष ई. पू. निश्चित की है। लोकमान्य तिलक के विवेचन के अनुसार यह काल और भी पूर्ववर्ती होना चाहिए। ऋग्वेद का गंभीर अध्ययन करने के बाद उन्होंने मृगशिरा नक्षत्र में वसंत संपात होने के अनेक संकेत एकत्रित किए। उन्हीं के आधार पर इन्होंने वेदमंत्रों की सर्वप्रथम रचना का काल 6000-4000 वर्ष विक्रम संवत् पूर्व माना।

भारतीय परंपरा के अनुसार समग्र वैदिक ज्ञानराशि पहले विभाजित नहीं थी। अतः लोकोपकार की दृष्टि से द्वापर युग के अंत में महर्षि

वेदव्यास ने इसका त्रिधा विभाजन किया : *ऋग्वेद, यजुर्वेद* और *सामवेद*। ऋग्वेद में स्तुतिपरक मंत्रों का संकलन किया गया। ऋक् का अर्थ होता है – स्तुति। इसी के आधार पर इस वेद का नाम ऋग्वेद रखा गया 'ऋचां वेदः ऋग्वेदः।' यज्ञ में उपयोगी मंत्रों के संकलन को यजुर्वेद कहा गया। यजुष् का अर्थ है- यजन (यज्ञ) में प्रयुक्त होने वाले मंत्र। सामन् का अर्थ, देवताओं को प्रसन्न करने वाले गेय मंत्र हैं। अतः ऐसे साममंत्रों के संकलन को सामवेद कहा गया। कालांतर में ऋक्, यजुष् और सामन् के माध्यम से तीनों रूपों में व्यवस्थित ऋग्वेद, यजुर्वेद और सामवेद को *'त्रयी'* की संज्ञा से अभिहित किया गया। किंचित् काल पश्चात् महर्षि अथर्वा ने अनेकविध मंत्रों का एक पृथक् संकलन तैयार किया, जो अथर्ववेद के नाम से प्रख्यात हो गया। इसमें ब्रह्म, परमात्मा, राजा, राज्यशासन, संग्राम, नाना देवता, यज्ञ, राष्ट्रीय चेतना, चरित्र निर्माण, औषधोपचार, आधि-व्याधि निवारण आदि अनेक प्रकार के सांसारिक विषय समाविष्ट हैं।

संस्कृत काव्य की परंपरा

काव्य के बीज वैदिक सूक्तों में भी दृष्टिगोचर होते हैं। ऋग्वेद में इंद्र, अग्नि, वरुण, मित्र, रुद्र, सवितृ, सोम, विष्णु, उषा आदि देवों की भावानुप्राणित स्तुतियाँ उपलब्ध होती हैं। ये सांगोपांग संस्कृत कविता के उत्कृष्ट उदाहरण हैं। ऋग्वेद की यह कविता ही विश्व की प्रथम कविता है। इस कविता में माधुर्य का अनुपम परिपाक, प्राकृतिक सुषमा के अद्भुत चित्र तथा जनजीवन की करुण एवं रसपूर्ण संवेदनाएँ दृष्टिगोचर होती हैं। सूर्या तथा सोम के विवाह प्रसंग (ऋ. 10-34) में प्रेम एवं सौंदर्य की तथा अक्षसूक्त में एक जुआरी के मन की गहरी व्यथा की अभिव्यक्ति किस सहृदय के मन को नहीं छूती। इसी दृष्टि से उषा-सूक्त तथा इंद्र-इंद्राणी, यम-यमी, पुरूरवा-उर्वशी आदि संवाद-सूक्त तथा मण्डूक-सूक्त उदात्त काव्योचित अभिव्यक्तियों के लिए उल्लेखनीय हैं।

वैदिक कविता ने समग्र विश्व को स्नेह, साहचर्य, सहयोग, ममता एवं विश्वबंधुत्व की शिक्षा दी है। समान यात्रा, समान वाणी और समान चिंतन का अनुपम आदर्श हमें ऋग्वेद की कविता में दृष्टिगोचर होता है :

सङ्गच्छध्वं संवदध्वं सं वो मनांसि जानताम्।
देवा भागं यथा पूर्वे सञ्जानाना उपासते।। ऋ.x.191.2

हमारे विचार समान हों, हमारी सहमति समान हो, हमारी मनोवृत्ति समान हो, समत्व का यह महामंत्र आज के युग में नितांत सार्थक है।

इसी प्रकार संपूर्ण पृथ्वी-सूक्त (अथर्व.XII.1) राष्ट्रीय अस्मिता का चूड़ांत निदर्शन है। वैदिक कवि तो पृथ्वी को ममतामयी माँ के ही रूप में देखने का अभिलाषी है। **"माता भूमिः पुत्रोऽहं पृथिव्याः"** का उद्घोष अथर्ववेद का महामंत्र है।

विषयवस्तु की दृष्टि से वेद का चार भागों में विभाजन किया जाता है : *मंत्र, ब्राह्मण, आरण्यक* एवं *उपनिषद्*। यहाँ मंत्र का अर्थ मनन योग्य वाक्य है, जो ऋग्वेद आदि संहिताओं के रूप में उपलब्ध है। इन मंत्रों की व्याख्या करने वाले भाग ब्राह्मण हैं। ये ग्रंथ यज्ञीय कर्मकांड से जुड़े हैं। आरण्यक-ग्रंथों में वानप्रस्थोचित नियम तथा आचारसंहिता का उल्लेख है। उपनिषदों का प्रतिपाद्य विषय है पारलौकिक गूढ़ रहस्यों का व्याख्यान। इस तरह वेद असीम हैं। उन्हें सही ढंग से समझने, इनके उच्चारण तथा उचित क्रियाकलापों में प्रयुक्त करने के लिए छः वेदाँगों का विकास किया गया। ये हैं : *शिक्षा, कल्प, व्याकरण, निरुक्त, छंद* और *ज्यौतिष*। ये सभी अपने-आप में स्वतंत्र शास्त्रों के रूप में विकसित हुए।

कर्मकांड एवं वानप्रस्थोचित नियमों से संबद्ध होने के कारण ब्राह्मण तथा आरण्यक ग्रंथों में कविता का प्रस्फुटन न के बराबर है। किंतु उपनिषद् वाङ्मय में काव्यधारा का एक प्रौढ़ एवं अलंकृत रूप दृष्टिगोचर होता है। उपमा, उत्प्रेक्षा तथा रूपकादि अलंकारों से ओत-प्रोत यह कविता गूढ़तम विषयों को सरलतम शब्दों में प्रतिपादित करती है। जिस प्रकार बहती हुई नदियाँ अपना नाम एवं रूप छोड़कर समुद्र-रूप हो जाती हैं, ठीक उसी प्रकार साधक भी परब्रह्म में विलीन हो जाता है :

यथा नद्यः स्यन्दमानाः समुद्रेऽस्तं गच्छन्ति नामरूपे विहाय।
तथा विद्वान् नामरूपाद् विमुक्तः परात्परं पुरुषमुपैति दिव्यम्।।
(मु.उ. III 2.8)

वैदिक कविता, निस्सन्देह आर्ष-प्रज्ञा का लीलाविलास है। यह कविता के लिए नहीं लिखी गई है। इसमें वैदिक ऋषि गूढ़ विषयों का चिंतन करते-करते अत्यंत सहृदय हो उठता है। प्रकृति सौंदर्य के नयनाभिराम दृश्य तथा लोकजीवन के मर्मस्पर्शी यथार्थ स्वतः ही वर्णनों में गुम्फित हो जाते हैं। किंतु कालांतर में वेद की यही नैसर्गिक कविता एक परिनिष्ठित ढाँचे में ढल गई, जिसका निदर्शन हमें रामायण, महाभारत और पुराणों में पर्याप्त मिलता है।

रामायण की रचना का एकमात्र उद्देश्य आदर्श महामानव के चरित्र की स्थापना था। मर्यादा पुरुषोत्तम राम के चरित्र में भक्तवत्सल, शरणागतरक्षक, दुष्टविनाशक जैसे उदात्त गुण चरितार्थ होते हैं। उस महान् चरित्र का ही यह प्रभाव था कि रामकथा देश, काल एवं व्यक्ति की सीमाओं का अतिक्रमण करती हुई प्राचीन चम्पा, कम्बुज (कम्बोडिया), कटाह द्वीप (मलेशिया) तथा सुवर्णद्वीप (जावा, सुमात्रा, बाली) में भी प्रसिद्ध हो गई।

रामायण में यद्यपि संस्कृत कविता का भावपक्ष, अधिक प्रबल है, तथापि उसमें लोकजीवन के विविध पक्ष भी उपेक्षित नहीं हैं। परवर्ती संस्कृत कवियों ने रामायण को आदिकाव्य तथा वाल्मीकि को आदिकवि के नाम से अभिहित किया है। रामायण की कविता निस्सन्देह परवर्ती संस्कृत कविता के समृद्धतम रूप की प्रथम आधारशिला है।

महाभारत महर्षि व्यास की कालजयी कृति है। एक लाख श्लोकों का यह ग्रंथ विविध सूचनाओं का विश्वकोष एवं ज्ञान-विज्ञान का भंडारग्रंथ है। मूलतः तो यह ग्रंथ कौरवों तथा पांडवों के महायुद्ध एवं विजय की कथा है, किंतु इतिहास के इस वर्णन में भी काव्यात्मकता का अद्भुत निर्वाह महर्षि वेदव्यास ने किया है। यह सत्य है कि

रामायण और महाभारत भाषा, भाव, शैली तथा कथानक की दृष्टि से समग्र संस्कृत साहित्य के उपजीव्य ग्रंथ बन गए हैं।

पुराणों का रचयिता भी महर्षि व्यास को ही माना जाता है। ये पुराण संख्या में 18 हैं। मत्स्य, मार्कण्डेय, भागवत, वामन, वराह, विष्णु, वायु, अग्नि, गरुड, स्कन्द आदि इनमें प्रमुख माने जाते हैं। इन पुराणों का प्रतिपाद्य विषय तो सर्ग, प्रतिसर्ग, वंश, मन्वन्तर आदि का विस्तृत विवेचन है किंतु कविता का अजस्र प्रवाह भी इनमें यत्र-तत्र दृष्टिगोचर होता है। भागवतपुराण का वेणुगीत, गोपीगीत तथा भ्रमरगीत समूची संस्कृत कविता का शृंगार है। पुराण की कविता किसी भी दृष्टि से भास एवं कालिदास की रसमयी कविता से कम नहीं है। कृष्ण के विरह में व्याकुल उनकी राजरानियों का कुररी पक्षी को दिया गया निम्न उपालम्भ अन्योक्तिपरंपरा का अनुपम उहारण है :

कुररि विलपसि त्वं वीतनिद्रा न शेषे स्वपिति जगति रात्र्यामीश्वरो गुप्तबोधः।
वयमिव सखि किंचिद् गाढनिर्भिन्नचेता नलिननयनहासोदारलीलेक्षितेन।।

(भागवत 10.90.15)

वैदिक वाङ्मय, रामायण, महाभारत एवं पुराण की ऊँची-नीची उपत्यकाओं में बहती सरस संस्कृत काव्यधारा अब भागीरथी की तरह समतलभूमि में प्रवेश कर अपने तटों पर पाणिनि, पतंजलि, कालिदास, भारवि, माघ एवं श्रीहर्ष जैसे पावन तीर्थों का निर्माण करने में लग जाती है। महर्षि पाणिनि (ई.पू. 5वीं शती) ने चिरकाल से प्रयोग में आ रही भाषा को परिमार्जित कर उसे एक स्थिर रूप प्रदान किया, जिसे संस्कृत कहा जाने लगा। लोक के लिए अधिक उपयोगी, सरल एवं बोधगम्य होने के कारण ही इस भाषा को कालांतर में लौकिक संस्कृत कहा जाने लगा।

महर्षि पाणिनि-प्रणीत *'जाम्बवतीविजय'* संभवतः लौकिक संस्कृत भाषा का प्रथम महाकाव्य है, जो कि अब उपलब्ध नहीं है। तत्पश्चात् वररुचि-प्रणीत महाकाव्य *'स्वर्गारोहण'* का उल्लेख भी मिलता है। वररुचि

का काल ई.पू.चतुर्थ शती माना जाता है। पतंजलि (ई.पू. 150 वर्ष) के महाभाष्य से भी संस्कृत कविता के विकास के बहुमूल्य साक्ष्य मिलते हैं। *वासवदत्ता*, *सुमनोत्तरा* तथा *भैमरथी* नामक आख्यायिकाओं का उल्लेख हमें महाभाष्य में ही मिलता है।

महाभाष्यकार पतंजलि के अनंतर संस्कृत कविता का श्रेष्ठ स्वरूप महाकवि कालिदास की कृतियों में देखने को मिलता है। वेदों से प्रारंभ काव्यधारा पुराणों के कलेवर तक जहाँ मुक्त वातावरण में प्रवाहित हुई, वहीं उसके अनंतर उसका विकास काव्य-लक्षणों की सीमाओं के बीच हुआ। ईसा की प्रारंभिक शताब्दियों में आविर्भूत आचार्य भरत का *नाट्यशास्त्र* काव्यशास्त्रीय लक्षणों का प्रथम मानक ग्रंथ है, जिसमें रस, गुण, अलंकार, छंद एवं रंगमंच का सूक्ष्म विवेचन मिलता है। शैली के आधार पर कविता का गद्य, पद्य तथा चम्पू के रूप में त्रिधा विभाजन भी हमें नाट्यशास्त्र के 18वें अध्याय में मिलता है। अवांतर काल में भामह, दण्डी तथा रुद्रट आदि आचार्यों ने जैसे-जैसे काव्यशास्त्रीय तथ्यों को परिमाार्जित किया, वैसे-वैसे काव्यकृतियों के स्वरूप भी परिवर्तित होते गए।

ई.पू. प्रथम शती के उज्जयिनी-नरेश विक्रमादित्य के राजकवि महाकवि कालिदास ने दो महाकाव्य : *रघुवंश* एवं *कुमारसंभव*, दो खंडकाव्य : *मेघदूत* एवं *ऋतुसंहार* तथा तीन नाटक : *अभिज्ञानशाकुन्तल*, *विक्रमोर्वशीय* तथा *मालविकाग्निमित्र* की रचना की। कालिदास के युग में हुए कवियों में अश्वघोष, शूद्रक, मातृचेट, आर्यशूर, कुमारदास तथा प्रवरसेन आदि की गणना होती है। इसे संस्कृत कविता का उत्कर्ष काल माना जाता है। इस युग की कविता में भाव तथा भाषा का सुंदर समन्वय मिलता है तथा व्यजंनावृत्ति की प्रधानता है। साथ ही, उपमा, रूपक, उत्प्रेक्षा, अप्रस्तुतप्रशंसा, समासोक्ति जैसे कोमल एवं सहज अर्थालंकारों द्वारा कविताकामिनी का सर्वत्र अलंकरण मिलता है। कालिदास की कविता इस विधा का सर्वोत्तम निदर्शन है। निम्नलिखित पद्य में भाव-सौंदर्य एवं उपमा का मंजुल समन्वय द्रष्टव्य है :

सञ्चारिणी दीपशिखेव रात्रौ यं यं व्यतीयाय पतिंवरा सा।
नरेन्द्रमार्गाट्ट इव प्रपेदे विवर्णभावं स स भूमिपालः।।

(रघुवंश 6.67)

महाकवि भारवि (6वीं शती ई.) के साथ कालिदासोत्तर संस्कृत कविता का उदय हुआ। इस युग के प्रमुख कवि हैं : भारवि, माघ, भट्टि, रत्नाकर, श्रीहर्ष आदि। इस युग की कविता में कलापक्ष की प्रधानता दिखाई देती है। शनैः शनैः संस्कृत कविता उत्तरोत्तर अलंकारों के प्रयोग से बोझिल होती गई। शब्दालंकारों तथा चित्रबंधों से उसकी दुरूहता, जटिलता एवं असम्प्रेषणीयता उत्तरोत्तर बढ़ती गई।

प्रायः 17वीं शती ई. में पंडितराज जगन्नाथ के साथ संस्कृत कविता के कलात्मक उत्कर्ष का अध्याय पूर्ण समझ लिया जाता है। इसके बाद संस्कृत कविता दो-तीन सौ वर्षों तक सिसकती और खिसकती रही। परंतु 19वीं शती के राष्ट्रीय पुनर्जागरण के साथ उसमें भी नए जीवन और नई चेतना का संचार आरंभ हो गया। इस युग के संस्कृत कवियों ने प्राचीन परंपराओं का परित्याग न करते हुए भी राष्ट्र के नूतन परिवेश में काव्य साधना की। पं. अम्बिकादत्त व्यास, म. म. गिरिधरशर्मा चतुर्वेदी, मथुरानाथ शास्त्री आदि का नाम इस युग के कवियों में उल्लेखनीय है। यह स्वातंत्र्योत्तर संस्कृत कविता का उदयकाल था।

एक ओर जहाँ संस्कृत कविता मानवीय संवेदना से जुड़कर विकसित हो रही थी, वहीं दूसरी ओर विज्ञान एवं शास्त्र-चिंतन से जुड़ी दूसरी काव्यधारा भी समानांतर स्तर पर प्रवाहित हो रही थी। आयुर्वेद, रसायन, ज्यौतिष जैसे वैज्ञानिक विषयों के साथ-साथ काव्यशास्त्र, दर्शनशास्त्र, गणित, तन्त्र, संगीत, काम आदि शास्त्रों का पल्लवन भी अबाधगति से हो रहा था। ये सभी शास्त्रीय ग्रंथ प्रायः पद्यबद्ध हैं। इनमें आयुर्वेद के चरकसंहिता एवं सुश्रुतसंहिता, रसायनविज्ञान के रसरत्नाकर (नागार्जुन), रसहृदयतंत्र (भगवत्पाद), रसरत्नसमुच्चय (वाग्भट), रसेन्द्रचूड़ामणि (सोमदेव), ज्योतिषशास्त्र के आर्यभटीय (आर्यभट),

पंचसिद्धान्तिका, बृहज्जातक, बृहत्संहिता (वराहमिहिर - 505 ई.) तथा भास्कराचार्य, नीलकण्ठ, कमलाकर आदि विद्वान् उल्लेखनीय हैं।

काव्यशास्त्र के ग्रंथों में काव्यालंकार (भामह-7वीं शती ई.), काव्यादर्श (दण्डी 7वीं शती ई.), काव्यालंकार (रुद्रट), वक्रोक्तिजीवित, काव्यप्रकाश (मम्मट), साहित्यदर्पण (विश्वनाथ) तथा रसगङ्गाधर (पण्डितराज जगन्नाथ) उल्लेखनीय हैं। आचार्य भरत का नाट्यशास्त्र, धनंजय का दशरूपक, रामचन्द्र गुणचन्द्र का नाट्यदर्पण आदि नाट्यशास्त्रीय ग्रंथ प्रसिद्ध हैं। आचार्य पिङ्गल का छंदःशास्त्र, क्षेमेन्द्र का सुवृत्ततिलक, नकुल का अश्वशास्त्र, वात्स्यायन का कामशास्त्र, कौटिल्य का अर्थशास्त्र तथा मनु, याज्ञवल्क्य आदि के स्मृतिग्रंथ भी अपनी-अपनी विधाओं के मूल स्रोत हैं। वस्तुतः विज्ञान एवं शास्त्र पर आधारित संस्कृत वाङ्मय का भंडार बहुत विशाल एवं विविध है। यहाँ केवल परिचयात्मक ज्ञान के लिए ही किंचित् सामग्री दी गई है।

संस्कृत गद्यकाव्य की परंपरा

संस्कृत गद्य की परंपरा वैदिक काल से मानी जा सकती है। तैत्तिरीय संहिता में गद्य का प्रयोग बहुल मात्रा में मिलता है। वैदिक साहित्य में ब्राह्मणों, आरण्यकों और उपनिषदों में संस्कृत गद्य का प्रभूत विकसित रूप पाया जाता है। शतपथ और ऐतरेय ब्राह्मण के कुछ गद्यमय आख्यान तो उत्तरकालीन कवियों के लिए उपजीव्य बन गए हैं। उपनिषदों में प्रयुक्त संस्कृत गद्य का निम्नलिखित उदाहरण द्रष्टव्य है :

'अथ ह जनको वैदेहो याज्ञवल्क्यमुपसमेत्योवाच भगवन् संन्यास-मनुब्रूहीति। स होवाच 'याज्ञवल्क्यो ब्रह्मचर्यं समाप्य गृहीभवेत्, गृहीभूत्वा वनीभवेत्, वनीभूत्वा प्रव्रजेत्।'

वैदिक साहित्य के बाद सूत्र-साहित्य में, विशेषकर धर्मसूत्रों में संस्कृत-गद्य का विकसित रूप मिलता है। पाणिनि की अष्टाध्यायी पर रचित पतंजलि का महाभाष्य गद्य में लिखा गया है। महाभारत में भी

कहीं-कहीं संस्कृत-गद्य के उत्कृष्ट उदाहरण देखने को मिलते हैं। दूसरी शती ई. में तो गद्य के विकास के प्रौढ़ प्रमाण मिल जाते हैं। इनमें रुद्रदामन् का गिरनार शिलालेख अलंकृत गद्यकाव्यशैली का उत्कृष्ट उदाहरण है। इस काल तक गद्य काव्यधारा निश्चित रूप में अपना स्वतंत्र अस्तित्व बना चुकी थी। उसके बाद आर्यशूर की जातकमाला में मनोहारी गद्य का स्वरूप मिल जाता है। हरिषेण द्वारा रचित समुद्रगुप्त-प्रशस्ति में भी संस्कृत गद्य का सुंदर एवं प्रौढ़ रूप दिखाई देता है। इस तरह पॉचवी शती तक आते-आते संस्कृत गद्य अपनी सभी विधाओं में प्रतिष्ठित हो चुका था। गुणाढ्य की बृहत्कथा से प्रभावित होकर *वेताल - पंचविंशतिका* जैसी कथाएँ लौकिक संस्कृत साहित्य में प्रतिष्ठा पा चुकी थीं। दिव्यावदान, अवदानशतक आदि जैसी सरस कथाएँ संस्कृत-गद्य को खूब पल्लवित करने लगीं। संस्कृत नाटकों में भी संवाद के रूप में गद्यकाव्य अपने वैभव को प्राप्त कर चुका था। छठी शती तक आते-आते गुण, अलंकार और रस की दृष्टि से गद्यकाव्य पर्याप्त समृद्ध हो चुका था। उसी काल में बाण की वाणी ने अपनी रचनाओं हर्षचरित और कादम्बरी के माध्यम से गद्यकाव्य को उन्नति की पराकाष्ठा तक पहुँचा दिया। बाण के गद्य में वर्ण-विन्यास, शब्द-प्रयोग, अर्थ-संकल्पना, भाव-सामंजस्य एवं रसमाधुर्य अपनी पराकाष्ठा पर पहुँच जाते हैं। उसके बाद के गद्यकारों में सुबन्धु, दण्डी, धनपाल, वामनभट्ट, अम्बिकादत्त व्यास आदि का नाम उल्लेखनीय है।

संस्कृत गद्यकाव्य का रूप, आधार, विषय आदि की दृष्टि से कई विधाएँ हैं, जो इस प्रकार हैं : कथा, आख्यायिका, आख्यान, चम्पू, प्रशस्ति, अभिलेख, पत्र एवं निबंध। इनमें कथा प्राचीनतम विधा है, जो कि कल्पनाप्रसूत कहानी पर आधारित होती है; जैसे– बाण की कादम्बरी। ऐतिहासिक विषयवस्तु को आधार बनाकर लिखे गए गद्यकाव्य को आख्यायिका कहते हैं; यथा – बाण का *हर्षचरित*। आख्यान का आकार प्रायः छोटा होता है जिसमें ऐतिहासिक तथा काल्पनिक दोनों प्रकार के विषय होते हैं। संस्कृत के आख्यान-साहित्य में *पंचतन्त्र, हितोपदेश, शुकसप्तति* आदि प्रसिद्ध हैं।

गद्य-पद्य मिश्रित काव्य को चम्पू कहा गया है। संस्कृत-साहित्य में त्रिविक्रमभट्ट का नलचम्पू, भोज का चम्पूरामायण, सोमदेवसूरि का *यशस्तिलकचम्पू* आदि विशेष महत्त्वपूर्ण हैं। संस्कृत के कवियों ने अपने आश्रयदाता राजाओं की प्रशंसा में प्रायः गद्यकाव्यों की रचना की है, जिन्हें प्रशस्तिकाव्य के नाम से जाना जाता है। प्राचीन काल में शिलाओं, ताम्रपत्रों तथा स्तूपों पर प्रायः शासनादेश लिखे जाते थे। इनका गद्य सामान्य गद्य से भिन्न होता था। अतः इन्हें अभिलेख गद्य का एक पृथक् भेद मान लिया गया। पत्र-लेखन भी प्राचीन काल से ही होता रहा है। संस्कृत गद्य-साहित्य की अपेक्षाकृत नवीन विधा निबंध लेखन है। संस्कृत गद्यमय निबंधों में हृषीकेश शास्त्री की *प्रबंध मंजरी*, रामावतार शर्मा का *प्रकीर्ण निबंध* आदि उल्लेखनीय हैं।

संस्कृत के प्रमुख गद्यकारों में आर्यशूर का नाम सर्वप्रथम लिया जा सकता है। उनका स्थितिकाल 300 ई. के आसपास माना जाता है। उनकी रचना जातकमाला में दीर्घ एवं लघु दोनों प्रकार के समासों का समन्वय प्राप्त होता है। छठी शती में हुए दण्डी का दशकुमारचरित संस्कृत गद्य का उत्कृष्ट निदर्शन है। इसकी भाषा नैसर्गिक, प्रवाहपूर्ण एवं मुहावरेदार है। दण्डी का पदलालित्य प्रसिद्ध है। सातवीं शती के पूर्वार्ध में सुबन्धु ने गौड़ी शैली में वासवदत्ता नामक गद्यग्रंथ की रचना की, जिसमें कन्दर्पकेतु और वासवदत्ता की प्रणयकथा वर्णित है। सुबन्धु ने अपनी रचना में लंबे-लंबे समासों, अनुप्रास तथा श्लेष अलंकार का विशेष रूप से प्रयोग किया है।

संस्कृत गद्यसाहित्य में सर्वाधिक प्रसिद्ध गद्यकार बाण ही हैं, उनकी *हर्षचरित* एवं *कादम्बरी* नाम की दो रचनाएँ गद्यकाव्य का अलंकार मानी गई हैं। रस, अलंकार, गुण, रीति आदि के समुचित प्रयोग के कारण कादम्बरी संस्कृत की सर्वोत्कृष्ट रचना मानी जाती है। त्रिविक्रमभट्ट की *नलचम्पू* सरस एवं प्रसादपूर्ण रचना है। इसमें सभङ्ग श्लेष एवं अभङ्ग श्लेष की प्रधानता है। धनपाल की *तिलकमंजरी*, बाण की शैली में लिखी गई है। इसकी भाषा पर्याप्त प्रांजल एवं

दुरूहता से रहित है। 11वीं शती के सोड्ढल की *उदयसुन्दरीकथा* गद्यबाहुल्य के कारण गद्यकाव्य में गिनी जाती है। इसमें पदसौष्ठव तथा आरोह स्पष्ट प्रतीत होते हैं। 19वीं शती के पूर्वार्द्ध में हुए अम्बिकादत्त के गद्यकाव्य *शिवराजविजय* में छत्रपति शिवजी का जीवन-वृत्त चित्रित है। इसमें यत्र-तत्र बाण की शैली का अनुकरण है। संपूर्ण गद्यकाव्य राष्ट्रीय भावना से ओत-प्रोत है।

संस्कृत भाषा में गद्य-रचना कम हुई है, फिर भी विभिन्न कालों में कवियों ने गद्यकाव्य की रचना में अपना कौशल प्रदर्शित किया है। आधुनिक काल के गद्यकारों में पण्डिता क्षमाराव (1890-1954 ई.) का नाम अग्रणी है। उन्होंने *कथामुक्तावली, विचित्रपरिषद्यात्रा* इत्यादि कई गद्य-काव्य लिखे हैं। इनके अतिरिक्त मथुरानाथ शास्त्री, हृषीकेश भट्टाचार्य, नवलकिशोर काङ्कर आदि के नाम भी आधुनिक गद्यसाहित्य में उल्लेखनीय हैं।

संस्कृत नाट्यसाहित्य की परंपरा

नाटक संस्कृत काव्य का सुन्दरतम रूप माना गया है - **'काव्येषु नाटकं रम्यम्।'** दर्शकों द्वारा देखे जाने के कारण इसे दृश्यकाव्य भी कहा जाता है। नाट्य की महिमा बतलाते हुए भरतमुनि ने लिखा है कि संसार का ऐसा कोई ज्ञान, शिल्प, विद्या, कला, योग और कर्म नहीं है, जो इसमें न आता हो। महाकवि कालिदास ने भी कहा है कि नाटक भिन्न-भिन्न रुचि के लोगों के लिए मनोरंजन का एक सामान्य साधन है। इसीलिए नाटक को संस्कृत काव्य की चरमपरिणति माना जाता है - **'नाटकान्तं कवित्वम्।'** सभी प्रकार के काव्यरूपों में नाटक अपेक्षाकृत अधिक जनप्रिय होते हैं, क्योंकि इनमें मनोरंजन, रस-भावाभिव्यक्ति और विषय की विविधता अधिक पाई जाती है।

नाटक की उत्पत्ति के बारे में विद्वानों के भिन्न-भिन्न मत मिलते हैं। भारतीय परंपरा नाटक को पंचम वेद मानती है। महामुनि भरत के अनुसार ब्रह्मा ने चारों वेदों का ध्यान करके ऋग्वेद से संवाद, सामवेद

से गान, यजुर्वेद से अभिनय और अथर्ववेद से रस के तत्त्वों को लेकर 'नाट्यवेद' नामक पंचम वेद की रचना की। कई विद्वानों ने ऋग्वेद के संवाद-सूक्तों में संस्कृत नाटकों का प्रारंभिक रूप देखा है। इन सूक्तों में *इन्द्र-मरुत्, अगस्त्य - लोपामुद्रा, विश्वामित्र - नदी, वसिष्ठ - सुदास, यम - यमी, इन्द्र - इंद्राणी, पुरूरवा - उर्वशी, सरमा - पणि* आदि के संवाद बहुत प्रसिद्ध हैं। ये संवादात्मक सूक्त नाटकीय माने गए हैं। पाश्चात्य विद्वानों ने नाटक की उत्पत्ति के संबंध में पुत्तलिका-नृत्य, स्वाँग, छायानाटक, वीरपूजा आदि के सिद्धांत प्रस्तुत किए हैं।

नाटक के विकास के लिए अपेक्षित तत्त्व गीत, वाद्य, अभिनय, संवाद आदि की सत्ता वैदिक काल में भी थी। रामायण और महाभारत में नट, नर्तक, नाटक आदि के प्रयोग से सिद्ध होता है कि उस युग में भी नाटकों का प्रचलन था। ईसापूर्व दूसरी शती में पतंजलि ने अपने महाभाष्य में *कंसवध* और *बलिबन्ध* नामक नाटकों के खेले जाने का उल्लेख किया है। ईसापूर्व पाँचवीं शती में पाणिनि ने अपनी *अष्टाध्यायी* में दो नटसूत्रों का उल्लेख किया है। ऐसा भी कहा जाता है कि पाणिनि ने *जाम्बवतीविजय* नामक नाटक की रचना भी की थी। अशोक के शिलालेखों में भी, नट और समाज का उल्लेख मिलता है। इससे सिद्ध होता है कि भारत में नाट्य-परंपरा अत्यंत प्राचीन काल से है।

संस्कृत नाट्यसाहित्य में सबसे प्राचीन रचनाएँ महाकवि भास की मिलती हैं। इनका समय चौथी-पांचवीं शती ई.पू. के लगभग माना जाता है। इन्होंने तेरह नाटकों की रचना की, जिनमें *स्वप्नवासवदत्त, प्रतिज्ञायौगन्धरायण, प्रतिमानाटक, पंचरात्र, दूतवाक्य, कर्णभार* आदि प्रसिद्ध हैं। इनके बाद शूद्रक का *मृच्छकटिक* उल्लेखनीय है।

महाकवि कालिदास का नाम संस्कृत नाट्यसाहित्य में सर्वोपरि है। इन्हें कविकुलगुरु भी कहा जाता है। इनका *अभिज्ञानशाकुन्तल* अनेक भारतीय एवं पाश्चात्य भाषाओं में अनूदित हो चुका है। इसमें आदर्श भारतीय जीवन का वर्णन है। *मालविकाग्निमित्र* और *विक्रमोर्वशीय* कालिदास के दो अन्य प्रसिद्ध नाटक हैं। कालिदास की शैली सरल, सरस, मधुर, प्रसाद तथा लालित्य गुणों से संपन्न है।

कालिदास के बाद अश्वघोष, विशाखदत्त, दिङ्नाग, भट्टनारायण, भवभूति, हर्ष आदि का नाम संस्कृत नाट्यसाहित्य में उल्लेखनीय है। इनमें भवभूति का नाम सर्वाधिक प्रसिद्ध है। उन्होंने तीन नाटकों की रचना की है : *मालतीमाधव, महावीरचरित* और *उत्तररामचरित*। इनमें उत्तररामचरित सर्वश्रेष्ठ है। यह वाल्मीकि रामायण के उत्तरकाण्ड की कथा पर आधारित है। इसमें करुण रस की अत्यंत सुंदर एवं मार्मिक निष्पत्ति देखने योग्य है। भवभूति में यद्यपि कालिदास की सी सरलता और सहजता नहीं है, फिर भी नाट्यसाहित्य में उन्हें कालिदास के समान ही सम्मान मिलता है। आदर्श वैवाहिक जीवन के चित्रण में भवभूति पारंगत हैं। राम और सीता के कोमल एवं पवित्र प्रेम का चित्रण भी 'उत्तररामचरित की विशिष्टता है।

संस्कृत नाटकों की प्रमुख विशेषता उनका सुखांत होना है। संपूर्ण नाटक में यद्यपि सुख और दुःख का सम्मिश्रण दृष्टिगोचर होता है, तो भी उसका अंत सुखांत ही होता है। सुख के उपपादन के लिए ही नाटक में दुःख का निष्पादन होता है। इसके पीछे भारतीय चिंतन ही मुख्यतः प्रधान है। प्राचीन भारत के निवासी आशावादी थे। उनके अनुसार जीवन में दुःख-क्लेश की परिणति सदैव सुख और परमानंद में होती है।

संस्कृत नाटकों में संवाद के लिए प्रायः गद्य का ही प्रयोग होता है, परंतु रोचकता, प्रकृतिवर्णन, नीतिशिक्षा आदि के लिए पद्य के प्रयोग को महत्त्व दिया जाता है। संस्कृत के साथ-साथ प्राकृत भाषाओं का प्रयोग भी संस्कृत नाटकों में मिलता है। सभी प्रकार के पात्र संस्कृत समझते तो हैं, किंतु अपने-अपने सामाजिक स्तर के अनुरूप संस्कृत या प्राकृत बोलते हैं। नायक के मित्र के रूप में विदूषक की कल्पना संस्कृत नाटकों की एक उल्लेखनीय विशेषता है। इन नाटकों में अभिनय संबंधी संकेत, यथा – प्रकाशम्, स्वगतम्, जनांतिकम्, सरोषम्, विहस्य इत्यादि सूक्ष्मता के साथ दिए जाते हैं। मनोरंजन के साथ-साथ नैतिकता और उच्च आदर्शों का जनमानस में संचार करना भी संस्कृत-नाटकों का एक लक्ष्य है। लौकिक और अलौकिक सभी प्रकार के पात्र इनमें होते हैं और प्रकृति-वर्णन संस्कृत-नाटकों की एक बहुत बड़ी विशेषता है।

प्रस्तुत संकलन

संस्कृत के अखिल भारतीय महत्त्व को ध्यान में रखते हुए राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद् के तत्त्वावधान में वरिष्ठ माध्यमिक स्तर पर वैकल्पिक विषय के रूप में संस्कृत पढ़ने वाले छात्रों के लिए प्रस्तुत संकलन का संपादन किया गया है। इससे पूर्व एकादश, द्वादश वर्ग की कक्षाओं के लिए गद्यपद्य एवं नाटक की स्वतन्त्र पुस्तकों का प्रावधान था। विगत वर्षों में परिषद् द्वारा प्रकाशित *विद्यालयीय शिक्षा के लिए राष्ट्रीय पाठ्यचर्या की रूप रेखा, 2000 ई.* के आधार पर विद्यालयों के लिए विकसित, नए पाठ्यक्रम के अनुरूप पाठ्यपुस्तकों के संशोधन परिवर्तन के क्रम में यह अनुभव किया गया कि संस्कृत साहित्य की विभिन्न विधाओं के पृथक्-पृथक् संकलन के स्थान पर एक ऐसा संकलन तैयार किया जाय, जो द्वादशवर्गीय कक्षा के छात्रों की वर्तमान अपेक्षाओं को पूर्ण करता हो तथा संस्कृत साहित्य की प्रमुख विधाओं-गद्य, पद्य एवं नाटक का प्रतिनिधित्व करता हो। तदनुसार **संस्कृत-संजीवनी द्वितीयो भागः** नामक यह नवीन संकलन तैयार किया गया। प्रस्तुत संकलन में दस पाठ हैं। इनमें प्रथम पाठ **उपनिषदाममृतम्** में ईशावास्योपनिषद्, मुण्डक, कठ, तैत्तिरीय एवं श्वेताश्वतर उपनिषद् से मंत्रों को संकलित किया गया है। विश्वशांति, विश्वबंधुत्व, चरित्र निर्माण और राष्ट्रप्रेम की दृष्टि से ये मंत्र छात्रों के लिए एक अनुकरणीय आदर्श प्रस्तुत करते हैं। द्वितीय पाठ **कर्मयोग** में श्रीमद्भगवद्गीता के द्वितीय व तृतीय अध्याय के 9 श्लोक संकलित हैं। इनमें निष्काम कर्म की महत्ता प्रतिपादित है। कर्म करने में ही मनुष्य का अधिकार है कर्मफल में नहीं। अतः फलासक्ति को छोड़कर कर्त्तव्य बुद्धि से कर्म करना चाहिए, कर्म-फल की दृष्टि से इस पाठ का बहुत महत्त्व है। तृतीय पाठ **कण्वोपदेशः** कालिदास के विश्वप्रसिद्ध *अभिज्ञानशाकुन्तलम्* नाटक के चतुर्थ अंक से संकलित है। इसमें पति-गृह जाती हुई शकुन्तला के लिए महर्षि कण्व ने गृहस्थ धर्म तथा सेवाधर्म का उपदेश दिया है। चतुर्थ पाठ **लक्ष्म्याः प्रभावः** महाकवि बाणभट्ट रचित *कादम्बरी* नामक सुप्रसिद्ध गद्य काव्य के शुकनासोपदेश प्रखण्ड से उद्धृत है। इसमें राजा तारापीड के पुत्र युवराज चन्द्रापीड के लिए महामंत्री शुकनास ने राज्यलक्ष्मी

के प्रभाव से तथा यौवन मद जनित विकार से होने वाले दुष्प्रभाव के निराकरण का उपदेश दिया है। पञ्चम पाठ **नीति-श्लोकाः** में कवि भर्तृहरि रचित *नीतिशतकम्* से 11 श्लोक संकलित हैं। इसमें मैत्री, दान इत्यादि विषयों पर नीतिगत उपदेश दिए गए हैं। इससे छात्रों के चरित्र निर्माण एवं संयम तथा आत्मोन्नयन का संदेश प्राप्त होता है। षष्ठ पाठ **'यथा बीजं तथा फलम्'** विष्णुशर्मा रचित *पञ्चतंत्र* से संकलित है। इसमें "लब्धप्रणाश" नामक चतुर्थतन्त्र की कथा का उल्लेख किया गया है। इस पाठ से यह शिक्षा मिलती है कि जैसा कर्म किया जाता है, उसी के अनुसार फल की प्राप्ति होती है। इसलिए सत्कर्म करने में यह पाठ प्रेरणाप्रद है। सप्तम पाठ **औषधम्** आयुर्वेद शास्त्र के उद्‌भट विद्वान् वाग्भट रचित *"अष्टाङ्गहृदयम्"* ग्रंथ से संगृहीत है। इनमें विविध रोगों के विविध औषधियों का निदान प्रस्तुत किया गया है। अंत में सदाचार से सभी रोगों पर नियंत्रण करने का उपदेश है, जिससे छात्रों को सदाचार में प्रवृत्त होने की प्रेरणा मिलती है। अष्टम पाठ **लवकौतुकम्** भवभूति रचित *उत्तररामचरितम्* नाटक के चतुर्थ अंक से संकलित है। इसमें लव व कुश के अद्‌भुत क्षात्र पराक्रम तथा स्वाभिमान का परिचय प्राप्त होता है। नवम पाठ **पाणिनिकथा** सोमदेव रचित *कथासरित्सागर* से उद्‌धृत है। इसमें प्रारंभ में मंदबुद्धि किंतु परिश्रम एवं अभ्यास के द्वारा विशिष्ट विद्वान् के रूप में पाणिनि ने *व्याकरणशास्त्र* की रचना की है तथा अन्य सभी व्याकरणों में पाणिनि व्याकरण मूर्धन्य है, इसका दिग्दर्शन किया गया है। दशम पाठ **लोकरक्षको रामः** प्रसिद्ध कवयित्री बालाम्बिका द्वारा रचित *सुबोधरामचरितम्* के बाल काण्ड से संकलित है। इसमें विनय, रूप, शील, दया, दाक्षिण्य, शौर्य इत्यादि मर्यादा पुरुषोत्तम श्रीराम के चरित्र का वर्णन किया गया है। इससे छात्रों को उच्च चरित्र निर्माण के लिए प्रेरणा प्राप्त होती है।

संकलन के सभी पाठों में विभिन्न मानवीय भावों का कुशलता से चित्रण किया गया है। मानवमूल्यों की स्थापना, सहज आंतरिक आकर्षण, परोपकार, बालमनोविज्ञान, रोगनिवारण, चरित्र निर्माण आदि की महत्ता एवं प्रबंध दक्षता की दृष्टि ये पाठ छात्रों के लिए शिक्षाप्रद एवं उपयोगी हैं। इसके अतिरिक्त इस संकलन का उद्देश्य छात्रों को

संस्कृत के प्रसिद्ध तथा महान् साहित्यकारों से परिचित करवाना भी है। इसके साथ-साथ उनकी सौंदर्यानुभूति का विकास करवाना भी इस संकलन का लक्ष्य है।

संस्कृत साहित्य की विशाल परंपरा से इस संकलन में उपनिषद्, पद्य-काव्य, गद्य-काव्य तथा नाटक से प्रतिनिधिभूत अंश संकलित हैं। जिन ग्रंथों से ये पाठ्यांश संकलित हैं, उनका संक्षिप्त परिचय यहाँ दिया गया है।

उपनिषद् : उपनिषद् का अर्थ रहस्य विद्या है। इसमें ज्ञान का सारतत्त्व वर्णित है। वेदमूलक उपनिषदों की संख्या 14 है। इसमें *ईशावास्योपनिषद्* शुक्लयजुर्वेद से संबद्ध है। प्राचीनतम परम व्यापक परमेश्वर की सत्ता का निर्वचन उक्त उपनिषद् का प्रतिपाद्य विषय है। त्याग एवं जीवन दर्शन की व्यवस्था का भी निरूपण इसमें किया गया है। 14 उपनिषदों में इस उपनिषद् का प्रमुख स्थान है। इसको संक्षेप में ईशोपनिषद् भी कहते हैं। एकत्व की भावना निष्काम कर्म परमात्मा का स्वरूप, त्यागपूर्वक भोग तथा विद्या और अविद्या का महत्त्व इसका मुख्य प्रतिपाद्य विषय है। इसमें कुल 18 पद्यात्मक मंत्र संकलित किए गए हैं।

कठोपनिषद् : यह कृष्ण यजुर्वेद से संबंधित है। यह पद्य बहुल भाषा में लिखी गई है। प्रारंभ में गद्य भी हैं। इसमें दो अध्याय हैं। प्रत्येक अध्याय में तीन-तीन वल्लियाँ हैं। इसमें योग के महत्त्व और भौतिक पदार्थों की असत्यता प्रतिपादित है। विशेष रूप से नचिकेता उपाख्यान इसमें महत्त्वपूर्ण है। नचिकेता ने यम से तीन वर प्राप्त किए, जिनमें प्रथम में पिता की कोप शांति, द्वितीय में अग्नि विद्या तथा तृतीय में आत्मतत्त्व का ज्ञान है। वस्तुतः यह उपनिषद् सांसारिक जीवन के ऊपर आध्यात्मिक जीवन के उत्कर्ष का प्रतिपादन करता है।

मुण्डकोपनिषद् : यह अथर्ववेद की शौनक शाखा से संबंधित है। इसके नामकरण का यह रहस्य है कि मुण्डित शिरवाले शिष्यों के द्वारा इसका अध्ययन किया जाता है तथा त्याग की पराकाष्ठा का उपदेश इसमें सन्निहित है, जो शिरो व्रत धारण करके विधिवत अध्ययन में प्रवृत्त होता है, उसी का अध्ययनाधिकार इस उपनिषद् में प्राप्त होता

है। यह तीन मुण्डकों में विभक्त है। प्रत्येक मुण्डक में दो-दो खण्ड हैं। प्रथम मुण्डक में परा और अपरा विद्या के दो भेद बताए हैं। इसकी भाषा पद्यबहुल है। ब्रह्मसाक्षात्कार होने पर सारी ग्रन्थियाँ छिन्न हो जाती हैं, यह इसका प्रतिपाद्य है। द्वितीय मुण्डक में ब्रह्म का व्यक्त स्वरूप निर्दिष्ट है। तृतीय मुण्डक में द्वैतवाद (प्रकृति-पुरुष) का उल्लेख किया गया है। अंत में "ब्रह्म वेद ब्रह्मैव भवति" यह उत्कृष्ट उपदेश प्राप्त होता है।

तैत्तिरीयोपनिषद् : कृष्ण यजुर्वेद की तैत्तिरीय शाखा के "तैत्तिरीयारण्यक" के 10 प्रपाठकों में सप्तम से नवम प्रपाठक तक को तैत्तिरीयोपनिषद् कहते हैं। इसमें तीन वल्लियाँ हैं : शिक्षावल्ली, ब्रह्मानन्दवल्ली, भृगुवल्ली। वल्लियों का अवान्तर विभाजन *अनुवाक्* नाम से किया गया है।

शिक्षावल्ली में प्राचीन शिक्षापद्धति तथा सत्यं वद, धर्मं चर इत्यादि उपदेश दिया गया है। ब्रह्मानन्दवल्ली में ब्रह्म को आनन्दमय, सत्यमय, और ज्ञानमय कहा गया है तथा उसी से आकाश, वायु, अग्नि, जल, पृथ्वी, वनस्पति, अन्न आदि की उत्पत्ति बतलाई गई है। भृगुवल्ली में भृगु के द्वारा अपने पिता वरुण से ज्ञान प्राप्ति का आख्यान वर्णित है। इसमें ब्रह्मजिज्ञासा विशेष रूप से निरूपित है। इस उपनिषद् का बादरायण के द्वारा ब्रह्मसूत्र में उपयोग किए जाने के कारण इसका विशेष दार्शनिक महत्त्व है।

श्वेताश्वतरोपनिषद् : यह उपनिषद् कृष्णयजुर्वेद से संबंधित है तथा परवर्ती उपनिषद् के रूप में चर्चित है। इसमें सांख्यदर्शन के मूल सिद्धांतों का प्रतिपादन किया गया है। कठोपनिषद् के अनेक मंत्र अविकल रूप से इसमें प्राप्त होते हैं। इसमें 6 अध्याय हैं। प्रथम अध्याय में ब्रह्म की व्यापकता और उसके साक्षात्कार का उपाय, द्वितीय अध्याय में ईश्वर की रुद्र रूप में स्तुति, चतुर्थ अध्याय में ब्रह्म *(ईश्वर)* की माया, पंचम अध्याय में परमात्मा का जीव के रूप में शरीर ग्रहण तथा षष्ठ अध्याय में एकात्मक ब्रह्म का देव के रूप में वर्णन है। संपूर्ण उपनिषद् पद्यात्मक है, जिसका दार्शनिक महत्त्व विद्वानों के द्वारा अंगीकृत है।

श्रीमद्भगवद्गीता : यह ग्रंथ महाभारत के भीष्म पर्व से संगृहीत है। इसमें 18 अध्याय हैं, जिनमें 18 प्रकार के योग का वर्णन किया गया है। समग्र योगों में कर्मयोग का विशिष्ट स्थान है। संसार में प्राणि-मात्र का जन्म कर्म करने के लिए हुआ है। क्षणमात्र भी बिना कर्म किए कोई नहीं रह सकता। यही कर्म निष्काम भावना से किए जाने पर निष्काम कर्मयोग के नाम से जाना जाता है। निष्काम का अर्थ है सभी प्रकार की कामनाओं का अभाव। इसी को शब्दांतर से अनासक्ति कहा जाता है। श्रीमद्भगवद्गीता के तृतीय अध्याय में भगवान् कृष्ण ने निष्काम कर्मयोग का सांगोपांग उपदेश अर्जुन के लिए दिया है तथा उसके माध्यम से प्राणि-मात्र का केवल कर्म में ही अधिकार है फल में नहीं, यह सिद्धांत प्रतिपादित किया गया है। यह कर्मयोग का सिद्धांत संपूर्ण विश्व के मानव मात्र के लिए त्रैकालिक सत्य के रूप में स्वीकृत है।

अभिज्ञानशाकुन्तल : यह महाकवि कालिदास रचित विश्वप्रसिद्ध नाटक है। इसमें 7 अंक हैं जिसमें प्रथम अंक में शकुंतला-दुष्यंत के गान्धर्व विवाह का वर्णन है। इसी प्रसंग को अनेक संदर्भों में महाकवि ने प्रेमपरिपाकपूर्ण दृष्टि से सातों अंकों में विभक्त किया है। संयोग एवं विप्रलंभ श्रृंगार का अद्भुत वर्णन इस नाटक में दृष्टिगत होता है। इस नाटक में श्रृंगार रस अंगी रस के रूप में प्रधान है तथा अन्य रस उसके उपकारक हैं। संस्कृत नाटकों में प्राच्य-पाश्चात्य आलोचकों की दृष्टि में शाकुंतल नाटक सर्वोत्कृष्ट माना जाता है। इसमें पुरुवंश का राजा दुष्यंत धीरोदात्त नायक है तथा शकुंतला तदनुरूपा प्रधान नायिका है। इस नाटक की सबसे बड़ी विशेषता यह है कि इसका समारंभ जैसी आरण्यक प्रकृति के क्रोड (गोद) में हुआ है, वैसे ही समापन भी उसी रूप में नाटककार ने किया है। अतः प्राकृतिक सौंदर्य में दुष्यंत शकुंतला के प्रेम-प्रसंग का अद्भुत चित्रण इस नाटक की विशेषता है।

कादम्बरी : महाकवि बाणभट्ट ने संस्कृत गद्य साहित्य के अपूर्व गद्यकाव्य कादम्बरी की रचना की। इसमें शूद्रक वर्णन से प्रारंभ कर प्रसंगगत अनेक अवांतर वर्णनों के साथ तारापीड एवं चन्द्रापीड नामक राजाओं का वर्णन किया गया है। अवांतर वर्णनों में विन्ध्याटवी, जाबालि,

शुकनासोपदेश, इन्द्रायुध, महाश्वेता, कादम्बरी इत्यादि का वर्णन अत्यंत सुरुचिपूर्ण विस्तार से आलंकारिक भाषा में किया गया है। न केवल संस्कृत गद्यसाहित्य में, विश्ववाङ्मय में कादम्बरी का शीर्षस्थ स्थान है। महाकवि बाण को साक्षात् बाणी का अवतार माना जाता है। इसलिए बाण से उच्छिष्ट सम्पूर्ण जगत है (बाणोच्छिष्टं जगत्सर्वम्)।

नीतिशतक : यह भर्तृहरिरचित अद्भुत नीतिकाव्य है। इसमें अनेक नीतियों का वर्णन किया गया है। यहाँ वर्णित नीतियों में केवल राजनीति के ही अर्थ में नहीं, अपितु आचार-व्यवहार के अर्थ में भी नीति शब्द का प्रयोग किया गया है। भर्तृहरि के द्वारा विलक्षण काव्यात्मक शैली में वर्णित नीति के वचन सभी के लिए सहजरूप से हृदयग्राही हैं। वस्तुतः यह नीतिशतक उत्तम नीतिकाव्य के रूप में संस्कृत साहित्य में प्रतिष्ठित है।

पञ्चतन्त्र : श्री विष्णुशर्मा रचित पञ्चतन्त्र संस्कृत कथा साहित्य में प्रसिद्ध है। इसमें पशुओं, पक्षियों तथा मनुष्यों को पात्र बनाकर कथा की सृष्टि की गई है। इन कथाओं में कला पक्ष यद्यपि उत्कृष्ट नहीं है, तथापि उपदेश देने की विशिष्ट क्षमता प्रतीत होती है। प्रायः सभी कहानियों में नैतिक शिक्षा की प्रधानता है। लोक में आचार, व्यवहार एवं नीति में कुशलता प्रदान करना इन कथाओं का प्रधान लक्ष्य है। इनमें 70 कथाएँ संगृहीत हैं तथा 900 श्लोक हैं। कथासाहित्य में पञ्चतन्त्र का विशिष्ट स्थान है। सुकुमारमति राजकुमारों के लिए कथा के द्वारा नाना नीतियों का उपदेश देना इसका प्रमुख कथ्य है।

अष्टाङ्गहृदय : आयुर्वेद शास्त्र के मर्मज्ञ वाग्भट रचित अष्टाङ्गहृदय आयुर्वेद का प्रसिद्ध ग्रंथ है। इसमें शरीर के प्रमुख आठ अंगों की चिकित्सा का निरूपण किया गया है। 7000 से अधिक पद्यों में लिखा हुआ यह ग्रंथ अत्यंत लोकप्रिय है, जिसका प्रमाण इस पर लिखी हुई 35 टीकाओं के द्वारा अंगीकृत है। वाग्भट ने कायचिकित्सा के सभी प्रमुख अंगों का निरूपण इस विशिष्ट ग्रंथ में किया है। आधुनिक चिकित्सा जगत् में भी इस ग्रंथ को पर्याप्त महत्त्व प्राप्त है। आयुर्वेद शास्त्र का यह आकर (विशिष्ट) ग्रंथ माना जाता है।

उत्तररामचरित : भवभूति के तीन नाटकों–मालतीमाधव, महावीरचरित और उत्तररामचरित में उत्तररामचरित सर्वोत्कृष्ट नाट्य कृति है। इसमें कवित्व और नाट्य कुशलता दोनों का पूर्ण परिचय प्राप्त होता है। भगवान् श्रीराम के राज्याभिषेक के बाद का उत्तर चरित्र वर्णित होने के कारण इसको उत्तररामचरित कहा जाता है। यह करुण रस प्रधान नाटक है, जो श्रीराम के त्याग और वियोग की पृष्ठभूमि में लिखा गया है। यह नाटक भवभूति की नाट्यकला की चरमोत्कर्ष कृति है।

कथासरित्सागर : कथासाहित्य के उद्भट विद्वान क्षेमेन्द्र द्वारा संकलित बृहत्कथामंजरी का अर्वाचीन विशाल संस्करण कथासरित्सागर है। वस्तुतः इसकी रचना कश्मीरी पंडित सोमदेव ने कश्मीरी नरेश अनंत की महारानी के मनोविनोद के लिए की थी। इसका रचना काल प्रायः 1064 ई. से 1081 के बीच माना जाता है। इसमें कथाओं को 18 लंबकों में विभाजित किया गया है। इन लंबकों में 124 तरंग हैं। वस्तुतः यह कथा की शैली में लिखा विशाल आख्यान है। इसमें 21388-श्लोक हैं। यह संस्कृत साहित्य में कथा साहित्य के शिखरस्थ विकास का उदाहरण है। कथासरित्सागर में ही वेतालपंचविंशति कथा अंतर्भूत है। पञ्चतन्त्र की भी बहुत–सी कथाएँ कथासरित्सागर में दृष्टिगत होती हैं। कथा के उच्च तथा निम्न उभय पक्षों का विवेचन इसमें वर्णित है। रसिकजनों के मनोविनोद के लिए लिखा गया यह विशिष्ट कथा ग्रंथ विश्वसाहित्य में शिखरस्थ है।

सुबोधरामचरित : अर्वाचीन संस्कृतवाङ्मय की लब्धप्रतिष्ठ कवयित्री बालाम्बिका रचित *सुबोधरामचरितम्* एक खण्ड काव्य है। इसमें मर्यादा पुरुषोत्तम श्रीराम के लोकधर्मपालक स्वरूप का चित्रण किया गया है। विनय, उदारता, दया, करुणा, शूरता, सौजन्य इत्यादि राम के गुणों का इसमें काव्यात्मक वर्णन किया गया है। विश्वामित्र के द्वारा प्राप्त बला और अतिबला विद्याओं का इसमें विशेष रूप से चित्रण किया गया है। प्रायः अनुष्टुप् छंदों का प्रयोग इस खण्ड काव्य में किया गया है।

पाण्डुलिपि-समीक्षा-संशोधन कार्यगोष्ठी के सदस्य

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14. डॉ. दया शंकर तिवारी
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15. श्रीमती उर्मिल खुंगर
    सेलेक्शन ग्रेड लेक्चरर
16. डॉ. कृष्णचन्द्र त्रिपाठी
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17. डॉ. कमलाकान्त मिश्र
    प्रोफेसर, संस्कृत (संयोजक)

विषयानुक्रमणिका

भारत का संविधान

भाग 4क

नागरिकों के मूल कर्त्तव्य

अनुच्छेद 51क

मूल कर्त्तव्य – भारत के प्रत्येक नागरिक का यह कर्त्तव्य होगा कि वह -

(क) संविधान का पालन करे और उसके आदर्शों, संस्थाओं, राष्ट्रध्वज और राष्ट्रगान का आदर करे,

(ख) स्वतंत्रता के लिए हमारे राष्ट्रीय आंदोलन को प्रेरित करने वाले उच्च आदर्शों को हृदय में संजोए रखे और उनका पालन करे,

(ग) भारत की संप्रभुता, एकता और अखंडता की रक्षा करे और उसे अक्षुण्ण बनाए रखे,

(घ) देश की रक्षा करे और आह्वान किए जाने पर राष्ट्र की सेवा करे,

(ङ) भारत के सभी लोगों में समरसता और समान भ्रातृत्व की भावना का निर्माण करे जो धर्म, भाषा और प्रदेश या वर्ग पर आधारित सभी भेदभावों से परे हो, ऐसी प्रथाओं का त्याग करे जो महिलाओं के सम्मान के विरुद्ध हों,

(च) हमारी सामासिक संस्कृति की गौरवशाली परंपरा का महत्त्व समझे और उसका परिरक्षण करे,

(छ) प्राकृतिक पर्यावरण की, जिसके अंतर्गत वन, झील, नदी और वन्य जीव हैं, रक्षा करे और उसका संवर्धन करे तथा प्राणिमात्र के प्रति दयाभाव रखे,

(ज) वैज्ञानिक दृष्टिकोण, मानववाद और ज्ञानार्जन तथा सुधार की भावना का विकास करे,

(झ) सार्वजनिक संपत्ति को सुरक्षित रखे और हिंसा से दूर रहे, और

(ञ) व्यक्तिगत और सामूहिक गतिविधियों के सभी क्षेत्रों में उत्कर्ष की ओर बढ़ने का सतत् प्रयास करे, जिससे राष्ट्र निरंतर बढ़ते हुए प्रयत्न और उपलब्धि की नई ऊंचाइयों को छू सके।

वन्दना

ॐ भद्रं कर्णेभिः शृणुयाम देवा
भद्रं पश्येमाक्षभिर्यजत्राः।
स्थिरैरङ्गैस्तुष्टुवाँसस्तनूभि–
र्व्यशेम देवहितं यदायुः।।1।।

(ऋग्वेद 1,89,8)

ॐ शं नो मित्रः शं वरुणः शं नो भवत्वर्यमा।
शं न इन्द्रो बृहस्पतिः। शं नो विष्णुरुरुक्रमः।।
नमो ब्रह्मणे। नमस्ते वायो। त्वमेव प्रत्यक्षं ब्रह्मासि।
त्वामेव प्रत्यक्षं ब्रह्म वदिष्यामि।
ऋतं वदिष्यामि। सत्यं वदिष्यामि।
तन्मामवतु। तद्वक्तारमवतु। अवतु माम्।
अवतु वक्तारम्।। ॐ शांतिः शांतिः शांतिः।।

(तैत्तिरीयोपनिषद् 1,1)

भावार्थः– हे देवगण ! हम कानों से मंगलप्रद वाक्य सुनें। हे यजनीय देवजन ! हम आँखों से मंगलवाहक वस्तु देखें ! हम दृढ़ अवयवों से युक्त शरीर से संपन्न होकर आपकी स्तुति करते हुए प्रजापति द्वारा निर्धारित आयु को प्राप्त करें।।1।।

सूर्य हमारा कल्याण करें। वरुण हमारे लिए सुखकर हों। अर्यमा हमारे लिए कल्याणकर हों। बृहस्पति इन्द्र हमारे लिए सुखकर हों। उरुक्रम (विस्तीर्ण-पाद-क्षेपी) विष्णु हमारे लिए सुखकर हों, सभी उपद्रवों का शमन करें। ब्रह्म को नमस्कार ! हे वायु ! आपको नमस्कार। आप ही प्रत्यक्ष ब्रह्म हैं। मैं आपको ही प्रत्यक्ष ब्रह्म कहूँगा। ऋत कहूँगा। सत्य कहूँगा। वह मेरी रक्षा करें। वह वक्ता की रक्षा करें। मेरी रक्षा करें। वक्ता की रक्षा करें। आधिभौतिक, आधिदैविक, आध्यात्मिक शांति हो।।2।।

प्रथमः पाठः

उपनिषदाममृतम्

वैदिक वाङ्मय को चार भागों में विभक्त किया गया है - संहिता, ब्राह्मण, आरण्यक तथा उपनिषद्। उपनिषद् ज्ञान के भंडार हैं। अतः इनको 'ज्ञानकाण्ड' के नाम से भी जाना जाता है। वेदों का अंतिम निष्कर्ष अथवा तत्त्वज्ञान इनमें समाहित है। अतः समस्त वेदों का अंत अर्थात् अंतिम चरमलक्ष्य (तत्त्वज्ञान) का प्रतिपादन होने से ये वेदांत शब्द से भी जाने जाते हैं। समस्त भारतीय दर्शनों के मूल हैं – उपनिषद्। अतः छात्रों को इनमें निहित ज्ञान का सूक्ष्म दिग्दर्शन कराने के लिए यह पाठ यहाँ संकलित है। इसमें ईशावास्य, कठ, मुण्डक, तैत्तिरीय एवं श्वेताश्वतर उपनिषदों से मन्त्र संगृहीत हैं।

विद्यां च चाविद्यां च यस्तद्वेदोभयं सह।
अविद्यया मृत्युं तीर्त्वा विद्ययाऽमृतमश्नुते।। 1।।

द्वा सुपर्णा सयुजा सखाया, समानं वृक्षं परिषस्वजाते।
तयोरन्यः पिप्पलं स्वाद्वत्ति, अनश्नन्नन्यो अभिचाकशीति।। 2।।

सह नाववतु सह नौ भुनक्तु सह वीर्यं करवावहै।
तेजस्वि नावधीतमस्तु मा विद्विषावहै।। 3।।

श्रेयश्च प्रेयश्च मनुष्यमेतस्तौ संपरीत्य विविनक्ति धीरः।
श्रेयो हि धीरोऽभिप्रेयसो वृणीते प्रेयो मन्दो योगक्षेमाद् वृणीते।। 4।।

यथा नद्यः स्यन्दमानाः समुद्रेऽस्तं गच्छन्ति नामरूपे विहाय।
तथा विद्वान् नामरूपाद् विमुक्तः परात्परं पुरुषमुपैति दिव्यम्।। 5।।

सत्यमेव जयति नानृतं सत्येन पन्था विततो देवयानः।
येनाक्रमन्त्यृषयो ह्याप्तकामा यत्र तत्सत्यस्य परमं निधानम्।।6।।
न चक्षुषा गृह्यते नापि वाचा नान्यैर्देवैस्तपसा कर्मणा वा।
ज्ञानप्रसादेन विशुद्धसत्त्वस्ततस्तु तं पश्यते निष्कलं ध्यायमानः।।7।।

शब्दार्थाः टिप्पण्यश्च

विद्या – (देव विषयक ज्ञान), अध्यात्मज्ञान।
अविद्या – लौकिक विद्या।
वेद – विद् + लट् + प्र.पु., ए.व., जानाति, जानता है।
मृत्युम् – मृत्युलोक।
तीर्त्वा – तर्निक्त्वा, पार करके।
अमृतम् – अमरता।
अश्नुते – प्राप्नोति 'अश्' धातु + लट् लकार + प्र.पु. ए.व. (आ.) प्राप्त करता है।
द्वा – द्वौ, वेद में औ, विभक्ति के स्थान में आ आदेश होता है।
सुपर्णा – सुपर्णौ, दो पक्षी (जीवात्मा और परमात्मा)।
सयुजा – सयुजौ सहैव युक्तौ, सदा साथ रहनेवाले।
सखाया – सखायौ, समानाख्यानौ, परस्पर सख्यभाव रखनेवाले।
समानं वृक्षम् – एक वृक्ष (शरीर) को।
परिषस्वजाते – परिष्वक्तवन्तौ, आश्रय लेकर स्थित हैं।
तयोरन्यः – उन दोनों में से एक (जीवात्मा)।
पिप्पलम् – सुखदुःखलक्षणं कर्मफलम्, कर्मों का सुख-दुःखात्मक फल।
अत्ति – अद् धातु + लट् + प्र.पु., एक व., भक्षयति, भोगता है।
अनश्नन् – न अश्नन्, न भुञ्जानः, अश् धातु + लट्–शतृ आदेश, पुं. प्रथमा, एकवचन। भोग न करता हुआ।

अभिचाकशीति	–	केवलं पश्यति, अभि+कश्+यङ् लुक् लट्, प्र.पु.ए.व., देखता ही है।
नाववतु	–	नौ+अवतु, नौ–अस्मद् शब्द के द्वितीया द्विवचन आवाम् के स्थान में नौ आदेश। अवतु– अव् धातु + लोट् + प्र. पु.ए.व.। हम दोनों की रक्षा करे।
भुनक्तु	–	भुज् धातु + लोट् + प्र.पु.ए.व.। पालन करे।
वीर्यम्	–	विद्यादिनिमित्तं सामर्थ्यम्। बल, शक्ति।
करवावहै	–	कृ धातु – आत्मनेपद + लोट् उ.पु. द्वि.व.। करें।
नावधीतम्	–	नौ+अधीतम्, अधीतम् – 'अधि' पूर्वक 'इङ्' धातु से क्त प्रत्यय, नपुं. प्रथमा, एक व. हम दोनों का अध्ययन।
नौ	–	'अस्मद्' के षष्ठी द्विवचन 'आवयोः' के स्थान में 'नौ' अन्वादेश।
अस्तु	–	अस् धातु + लोट्, प्र.पु.ए.व., हो।
तेजस्वि	–	सुष्ठु अधीतम्, सफलम् (अर्थज्ञानयोग्यमस्तु इत्यर्थः, तेज से सम्पन्न)।
मा विद्विषावहै	–	'वि' पूर्वक 'द्विष्' धातु+लोट् (आत्मनेपद) उ.पु., द्वि.व.। विद्वेष न करें।
प्रेयः	–	ऐहिक अभ्युदय। प्रिय + ईयसुन्, 'प्रिय' के स्थान में 'प्र' आदेश, प्रियतर।
श्रेयः	–	प्रशस्य+ईयसुन्, प्रशस्य के स्थान में श्र आदेश, प्रशस्यतर कल्याण।
विविनक्ति	–	वि पूर्वक विचिर् पृथग् भावे धातु + लट् – प्र.पु. एकवचन। विवेचन करता है।
वृणीते	–	वृञ् धातु – आत्मनेपद, लट्, प्र.पु.ए.व.। वरण करता है।
स्यन्दमानाः	–	स्यन्द् धातु + लट् (शानच्) प्रथमा बहुवचन। बहती हुईं।
नामरूपे	–	नाम च रूपं च, द्वन्द्वसमास, नाम और रूप।
उपैति	–	'उप' उपसर्गपूर्वक, इण् धातु + लट्, प्र.पु.एकवचन। उप + एति = उपैति, 'एत्येधत्यूठ्सु' से वृद्धि। प्राप्त होता है।

जयति	–	जि + लट् + प्र., एकवचन, जीतता है, विजयी होता है।
नानृतम्	–	न + अनृतम्, असत्य नहीं।
विततः	–	वि + तन् + क्त, विस्तीर्ण।
देवयानः	–	देव मार्ग।
येनाक्रमन्त्यृषयः	–	येन + आक्रमन्ति+ऋषयः, जिस मार्ग से ऋषि गमन करते हैं।
ह्याप्तकामाः	–	हि+आप्तकामाः, प्राप्त मनोरथ।
गृह्यते	–	ग्रह् उपादाने (कर्मवाच्य) + लट् + प्र.पु. एकवचन।
विशुद्धसत्त्वः	–	विशुद्ध अन्तःकरण वाला।
निष्कलम्	–	संपूर्ण अवयवभेद से रहित।
ध्यायमानः	–	ध्यै + लट् + शानच्, प्रथमा वि., एकवचन। चिन्तयन्, ध्यान करता हुआ।

अभ्यासः

1. **संस्कृतभाषया उत्तराणि दीयन्ताम्**
   (क) विद्वान् कया मृत्युं तरति ?
   (ख) विद्वान् कया अमृतं अश्नुते ?
   (ग) समानं वृक्षं कौ परिषस्वजाते ?
   (घ) स्वादु पिप्पलं कः अत्ति ?
   (ङ) कः अनश्नन् अभिचाकशीति ?
   (च) कः श्रेयश्च प्रेयश्च विविनक्ति?
   (छ) देवयानः पन्थाः केन विततः ?
2. **रिक्तस्थानानि पूरयत**
   (क) विद्यया ________ अश्नुते।
   (ख) तयोरन्यः ________ अत्ति।
   (ग) तेजस्वि ________ अस्तु।
   (घ) प्रेयो ________ योगक्षेमाद् वृणीते।
   (ङ) सत्यमेव ________ नानृतम्।

3. प्रकृतिप्रत्ययविभागः क्रियताम्

तीर्त्वा, अनश्नन्, संपरीत्य, स्यन्दमानः, विद्वान्, विततः, ध्यायमानः।

4. सन्धिविच्छेदं कुरुत

चाविद्याम्, वेदोभयम्, विद्ययाऽमृतम्, स्याद्वत्ति, श्रेयश्च, समुद्रेऽस्तम्, उपैति, ह्याप्तकामाः, आक्रमन्त्यृषयः।

5. आशयः स्पष्टीक्रियताम्

(क) विद्ययाऽमृतमश्नुते।

(ख) श्रेयश्च प्रेयश्च मनुष्यमेतः।

(ग) तथा विद्वान् नामरूपाद् विमुक्तः
परात्परं पुरुषमुपैति दिव्यम्।

(घ) सत्यमेव जयति नानृतम्।

(ङ) अनश्नन्नन्यो अभिचाकशीति।

द्वितीयः पाठः

कर्मयोगः

प्रस्तुत पाठ, श्रीमद्भगवद्गीता के द्वितीय एवम् तृतीय अध्यायों से संगृहीत है। श्रीमद्भगवद्गीता वह विश्वप्रसिद्ध ग्रंथरत्न है, जिसमें भगवान् श्रीकृष्ण ने विषादग्रस्त अर्जुन को कर्त्तव्य का उपदेश देकर धर्मरक्षार्थ युद्ध के लिए प्रेरित किया था। भगवान् ने अर्जुन के माध्यम से संसार को निष्काम कर्म का उपदेश दिया है। कर्मों में कुशलता को ही भगवान् ने योग बताया है। अतः सभी को फलासक्ति के बिना निःसंगभाव से सदा सर्वहित के कार्यों में संलग्न रहना चाहिए। यही उपनिषदों का भी संदेश है– *कुर्वन्नेवेह कर्माणि जिजीविषेच्छतं समाः*।

कर्मण्येवाधिकारस्ते मा फलेषु कदाचन।
मा कर्मफलहेतुर्भूर्मा ते सङ्गोऽस्त्वकर्मणि।।1।।

बुद्धियुक्तो जहातीह उभे सुकृतदुष्कृते।
तस्माद्योगाय युज्यस्व योगः कर्मसु कौशलम्।।2।।

नियतं कुरु कर्म त्वं कर्म ज्यायो ह्यकर्मणः।
शरीरयात्रापि च ते न प्रसिद्ध्येदकर्मणः।।3।।

न कर्मणामनारम्भान्नैष्कर्म्यं पुरुषोऽश्नुते।
न च सन्न्यसनादेव सिद्धिं समधिगच्छति।।4।।

न हि कश्चित्क्षणमपि जातु तिष्ठत्यकर्मकृत्।
कार्यते ह्यवशः कर्म सर्वः प्रकृतिजैर्गुणैः।।5।।

तस्मादसक्तः सततं कार्यं कर्म समाचर।
असक्तो ह्याचरन्कर्म परमाप्नोति पूरुषः।।6।।
कर्मणैव हि संसिद्धिमास्थिता जनकादयः।
लोकसंग्रहमेवापि संपश्यगन्कर्तुमर्हसि।।7।।
यद्यदाचरति श्रेष्ठस्तत्तदेवेतरो जनः।
स यत्प्रमाणं कुरुते लोकस्तदनुवर्तते।।8।।
न बुद्धिभेदं जनयेदज्ञानां कर्मसङ्गिनाम्।
जोषयेत्सर्वकर्माणि विद्वान्युक्तः समाचरन्।।9।।

शब्दार्थाः टिप्पण्यश्च

कर्मण्येवाधिकारः	– कर्मणि+एव–अधिकारः, कर्म करने में ही अधिकार है।
कदाचन	– (अव्यय), कभी भी।
कर्मफलहेतुः	– कर्मों के फल का कारण।
भूः	– भू धातु + लुङ् + म.पु.ए.व., माङ् के योग में अट् का निषेध (न माङ् योगे), बनो।
मा	– मत।
सङ्गोऽस्त्वकर्मणि	– सङ्गः + अस्तु + अकर्मणि, कर्म न करने में आसक्ति (न हो)।
जहातीह	– जहाति + इह, ह्य धातु+लट्+प्र.पु. ए. व., यहाँ, (इस लोक में) त्याग देता है।
सुकृतदुष्कृते	– पुण्य और पाप।
युज्यस्व	– युज् धातु (आत्मनेपद) + लोट् + म. पु. ए. व., लग जा, प्रयत्न करो।।

कुरु — डुकृञ्+ (परस्मैपद) लोट् + म. पु. ए. व., करो।

ज्यायः — प्रशस्य + ईयसुन्, नपुं. + प्र. वि. ए. व., श्रेष्ठ है।

ह्यकर्मणः — हि + अकर्मणः, क्योंकि कर्म न करने से।

शरीरयात्रापि — लौकिकव्यवहारः (शरीरयात्रा+अपि), शरीर-निर्वाह भी।

प्रसिद्ध्येदकर्मणः — प्रसिद्ध्येत् + अकर्मणः, कर्म न करने से सिद्ध नहीं होगा।

कर्मणामनारम्भान्नैष्कर्म्यम् — कर्मणाम् + अन् + आरम्भात् + नैष्कर्म्यम्, कर्मों का आरंभ किए बिना निष्कर्मता को।

अश्नुते — अश् लट् प्र. पु. ए. व., प्राप्त करता है।

समधिगच्छति — सम् + अधि + गम् धातु + लट् + प्र. पु. ए. व., प्राप्त करता है।

जातु — (अव्यय), कभी।

न तिष्ठत्यकर्मकृत् — तिष्ठति + अकर्मकृत्, बिना कर्म किए हुए नहीं रहता।

समाचर — सम् + आङ् + चर् धातु + लोट् + म. पु. ए. व., भलीभाँति करो।

असक्तः — सञ्ज् धातु + क्त सक्तः न सक्तः असक्तः, नञ् तत्पुरुष समास, अनासक्त होकर।

आचरन् — आङ् + चर् + शतृ, करता हुआ।

आप्नोति — आप् धातु + लट् + प्र. पु. ए. व., प्राप्त करता है।

आस्थिताः	– आङ् + स्था धातु + क्त, प्राप्त हुए थे।
लोकसंग्रहमेवापि	– लोकसंग्रहम् + एव + अपि, लोकसंग्रह को भी।
अर्हसि	– अर्ह् धातु + लट् + म. पु. ए. व., योग्य हो।
आचरति	– आङ् + चर् धातु + लट् + प्र. पु. ए. व., आचरण करता है।
इतरः	– अन्य लोग, सब लोग।
अनुवर्तते	– अनु + वृत् धातु + लट् + प्र. पु. ए. व., अनुसरण करता है।
न जनयेत्	– जन् धातु + णिच् + लिङ् + प्र. पु. ए. व., उत्पन्न नहीं करना चाहिए।
कर्मसङ्गिनाम्	– कर्म में आसक्त मनुष्यों का।
जोषयेत्	– जुष् + धातु णिच् लिङ् + प्र. पु. ए. व., करवाना चाहिए, लगाना चाहिए।

अभ्यासः

1. **संस्कृतभाषया उत्तरत**
   (क) अयं पाठः कस्मात् ग्रन्थात् राङ्कलितः ?
   (ख) अस्माकम् अधिकारः कुत्र वर्तते ?
   (ग) अस्माकं सङ्गः कुत्र न भवतु ?
   (घ) अकर्मणः किं ज्यायः ?
   (ङ) जनकादयः केन सिद्धिम् आस्थिताः ?
   (च) लोकः किम् अनुवर्तते ?

2. **रिक्तस्थानानि पूरयत**
   - (क) कर्मण्येवाधिकारस्ते मा ________ कदाचन।
   - (ख) बुद्धियुक्तो जहातीह उभे ________।
   - (ग) तस्माद् योगाय युज्यस्व योगः ________ कौशलम्।
   - (घ) स यत्प्रमाणं कुरुते ________।
   - (ङ) जोषयेत्सर्वकर्माणि ________ समाचरन्।
3. **पद्यांशानां भावार्थः करणीयः**
   - (क) योगः कर्मसु कौशलम्।
   - (ख) कर्म ज्यायो ह्यकर्मणः।
   - (ग) तस्मादसक्तः सततं कार्यं कर्म समाचर।
   - (घ) लोकसंग्रहमेवापि संपश्यन्कर्तुमर्हसि।
   - (ङ) यद्यदाचरति श्रेष्ठस्तत्तदेवेतरो जनः।
4. **अधोलिखितप्रयोगेषु समास-विग्रहं कृत्वा समासनाम लिखत**

   कर्मफलहेतुः, सुकृतदुष्कृते, शरीरयात्रा, जनकादयः,
   लोकसंग्रहम्, सर्वकर्माणि, असक्तः, कर्मसङ्गिनाम्।
5. **निम्नाङ्कितप्रयोगाणाम् एकवचनान्तरूपाणि लिखत**

   फलेषु, कर्मसु, कर्मणाम्, गुणैः, जनकादयः, अज्ञानानि, सर्वकर्माणि
6. **निम्नाङ्कितप्रयोगाणां बहुवचनान्तरूपाणि लिखत**

   अधिकारः, कर्म, सिद्धिम्, तिष्ठति, कश्चित्, आचरति, अनुवर्तते।
7. **अधोलिखितक्रियापदानां लकारपुरुषवचननिर्देशं कुरुत**

   जहाति, युज्यस्व, कुरु, अश्नुते, समधिगच्छति,
   तिष्ठति, आप्नोति, अनुवर्तते, जनयेत्, जोषयेत्।

तृतीयः पाठः

कण्वोपदेशः

अभिज्ञानशाकुन्तल, महाकवि कालिदास का प्रसिद्ध नाटक है। उसमें भी चतुर्थ अंक अतीव महत्त्वपूर्ण है। कालिदास-रचित अभिज्ञान-शाकुन्तलम् के चतुर्थ अंक से उद्धृत प्रस्तुत प्रसंग में शकुंतला अपने पतिगृह जा रही है। वहाँ उसे पति एवं परिजनों के साथ कैसा व्यवहार करना चाहिए? एक पिता के रूप में महर्षि कण्व ने कुशल गृहिणीपद-प्राप्ति के लिए इस विषय में उपदेश दिया है। उसमें प्रकृति-चित्रण अत्यंत मनोरम एवं आशीर्वादात्मक है। यहाँ पुत्री-बिदाई प्रसंग में करुण रस का अत्यंत मार्मिक परिपाक हुआ है। वीतराग महर्षि कण्व भी पुत्री-वियोग के विचारमात्र से अधीर एवं विकल हो जाते हैं।

(प्रविश्य उपायनहस्तौ ऋषिकुमारकौ)

उभौ : इदमलङ्करणम् अलङ्क्रियतामत्रभवती।
(सर्वा विलोक्य विस्मिताः)

गौतमी : वत्स नारद ! कुत एतत् ?

प्रथमः : तातकाश्यपप्रभावात्।

गौतमी : किं मानसी सिद्धिः?

द्वितीयः : न खलु, श्रूयताम्, तत्रभवता वयमाज्ञप्ताः शकुन्तलाहेतोर्वनस्पतिभ्यः कुसुमान्याहरत इति। तत इदानीम्-

क्षौमं केनचिदिन्दुपाण्डु तरुणा माङ्गल्यमाविष्कृतं
निष्ठ्यूतश्चरणोपभोगसुलभो लाक्षारसः केनचित्।
अन्येभ्यो वनदेवताकरतलैरापर्वभागोत्थितै–
र्दत्तान्याभरणानि तत्किसलयोद्भेदप्रतिद्वन्द्विभिः।।1।।

गौतमी : जाते ! अनया अभ्युपपत्त्या सूचिता ते भर्तुर्गेहे अनुभवितव्या राजलक्ष्मीरिति।

(शकुन्तला व्रीडां रूपयति)

प्रथमः : एह्येहि अभिषेकोत्तीर्णाय काश्यपाय वनस्पतिसेवां निवेदयावः।

द्वितीयः : (तथा इति निष्क्रान्तौ)।

सख्यौ : अये अनुपयुक्तभूषणोऽयं जनः। चित्रकर्मपरिचये-नाङ्गेषु त आभरण-विनियोगं कुर्वः।

शकुन्तला : जाने वां नैपुणम्। {उभे नाट्येनालङ्कुरुतः}

(ततः प्रविशति स्नानोत्तीर्णः काश्यपः)

काश्यपः : यास्यत्यद्य शकुन्तलेति हृदयं संस्पृष्टमुत्कण्ठया
कण्ठः स्तम्भितवाष्पवृत्तिकलुष-श्चिन्ताजडं दर्शनम्।
वैक्लव्यं मम तावदीदृशमिदं स्नेहादरण्यौकसः
पीड्यन्ते गृहिणः कथं न तनयाविश्लेषदुःखैर्नवैः।।2।।

(इति परिक्रामति)

सख्यौ : हला शकुन्तले! अवसितमण्डनासि। परिधत्स्व साम्प्रतं क्षौमयुगलम्।

(शकुन्तलोत्थाय परिधत्ते)

गौतमी : जाते एष त आनन्दपरिवाहिणा चक्षुषा परिष्वजमान इव गुरुरुपस्थितः। आचारं तावत्प्रतिपद्यस्व।

शकुन्तला : (सव्रीडम्) तात! वन्दे।

काश्यपः : वत्से!
यथातेरिव शर्मिष्ठा भर्तुर्बहुमता भव।
सुतं त्वमपि सम्राजं सेव पूरुमवाप्नुहि।। 3।।

गौतमी : भगवन् ! वरः खल्वेष; नाशीः।

काश्यपः (ऋक्छन्दसाऽऽशास्ते)
अमी वेदिं परितः क्लृप्तधिष्ण्याः
समिद्वन्तः प्रान्तसंस्तीर्णदर्भाः।
अपघ्नन्तो दुरितं हव्यगन्धै
र्वैतानास्त्वां वह्नयः पावयन्तु।। 4।।

शार्ङ्गरवः : इत इतो भवती। (सर्वे परिक्रामन्ति)

काश्यपः : भो भोः संनिहितास्तपोवनतरवः।
पातुं न प्रथमं व्यवस्यति जलं युष्मास्वपीतेषु या
नादत्ते प्रियमण्डनापि भवतां स्नेहेन या पल्लवम्।
आद्ये वः कुसुमप्रसूतिसमये यस्या भवत्युत्सवः
सेयं याति शकुन्तला पतिगृहं सर्वैरनुज्ञायताम्।। 5।।

शार्ङ्गरवः : भगवन् ! ओदकान्तं स्निग्धो जनोऽनुगन्तव्य इति श्रूयते। तदिदं सरस्तीरम् अत्र संदिश्य प्रतिगन्तुमर्हसि।

काश्यपः : शार्ङ्गरव ! इति त्वया मद्वचनात्स राजा शकुन्तलां पुरस्कृत्य वक्तव्यः।

शार्ङ्गरवः : आज्ञापयतु भवान्।

काश्यपः : अस्मान्साधु विचिन्त्य संयमधनानुच्चैः कुलं चात्मन-
स्त्वय्यस्याः कथमप्यबान्धवकृतां स्नेहप्रवृत्तिं च ताम्।
सामान्यप्रतिपत्तिपूर्वकमियं दारेषु दृश्या त्वया
भाग्यायत्तमतः परं न खलु तद्वाच्यं वधूबन्धुभिः।। 6।।

शार्ङ्गरवः - गृहीतः सन्देशः।

शब्दार्थाः टिप्पण्यश्च

उपायनहस्तौ	–	उपायनम् उपहारः, हस्तयोः ययोः तौ. बहुव्रीहिसमास, उपहार को हाथों में लिए हुए।
अलङ्करणम्	–	अलम् + कृधातु + ल्युट् (अन) नपुं. प्र. वि. ए. व., आभूषण।
अलङ्क्रियताम्	–	अलम् + कृ धातु + लोट् (कर्मवाच्य) – प्र. पु. ए. व., अलङ्कृत कीजिए।
विस्मिताः	–	वि + ष्मिङ् + क्त + टाप् प्र. वि. ब. व., आश्चर्ययुक्त।
मानसी	–	मन से उत्पन्न।
श्रूयताम्	–	श्रु श्रवणे; श्रु (भाववाच्य) लोट् प्र. पु. ए. व.। सुनिए
आज्ञप्ताः	–	आङ् + ज्ञप् + क्त + प्र. वि. ब. व.। जिन्हें आदेश दिया गया हो, वे।
आहरतेति	–	(आहरत + इति), आङ् + हृ + लोट् + म. पु. ब.व., लाओ ऐसा।
क्षौमम्	–	रेशमी वस्त्र।
केनचिद्	–	किसी के द्वारा।
इन्दुपाण्डु	–	चंद्रमा के समान धवल (उजले)।
आविष्कृतम्	–	आविस् + कृधातु + क्त, प्रकट किया।
निष्ठ्यूतः	–	निकाल कर दिया।
चरणोपभोगसुलभः	–	पैरों में लगाने के लिए उपयोगी।
लाक्षारसः	–	अलक्तक, महावर।
वनदेवताकरतलैः	–	वनदेवियों के हाथों से।
आपर्वभागोत्थितैः	–	(आपर्वभाग + उत्थितैः) मणिबंध स्थान तक (बाहर), निकले हुए।
दत्तान्याभरणानि	–	(दत्तानि + आभरणानि), आभूषण दिए।
तत्किसलयोद्भेद-प्रतिद्वन्द्विभिः	–	तत्किसलय + उद्भेद – प्रतिद्वन्द्विभिः वृक्षपल्लवों की कांति से स्पर्धा करने वाले।
अभ्युपपत्त्या	–	अभि + उप + पद् धातु + क्तिन् + तृ. वि. ए. व.।

अनुभवितव्या – अनु + भू + तव्यत् (कर्मणि) + टाप्, उपयोग करोगी।

राजलक्ष्मीः – राजलक्ष्मी, महारानी पद की प्रतिष्ठा।

अभिषेकोत्तीर्णाय – अभिषेक + उत्तीर्णाय, अभिषेक – अभि + सिच् धातु + घञ्, स्नान करके निकले हुए।

अनुपयुक्तभूषणः – अनुपयुक्तानि भूषणानि येन सः बहुव्रीहि समास, जिसने गहने नहीं पहने हैं।

चित्रकर्मपरिचयेन – चित्राणां कर्माणि (रचनाः) तेषा परिचयेन – तत्पुरुष समास। चित्रों के परिचय से, चित्रों को देखकर।

आभरणविनियोगम् – आभरणानां विनियोगम् – षष्ठी तत्पुरुष-समास, गहनों को पहनाना।

यास्यत्यद्य – (यास्यति + अद्य) या धातु + लृट् + प्र. पु. ए. व., आज जाएगी।

संस्पृष्टम् – सम् + स्पृश् + क्त + (नपुं.) प्र. वि. ए. व., संबद्ध।

उत्कण्ठया – आकुलता से।

स्तम्भितबाष्पवृत्तिकलुषः – स्तम्भिता वाष्पस्य वृत्तिः यस्य सः अतएव कलुषः बहुव्रीहि समास। आँसुओं के प्रवाह को रोकने के कारण कण्ठ अवरुद्ध हो गया है।

वैक्लव्यम् – विकलता।

अरण्यौकसः – अरण्यं ओकः येषां ते बहुव्रीहि समास, वन ही है निवास स्थान जिनका, वे वनवासी।

पीड्यन्ते – पीड् (कर्मवाच्य) + लट् + प्र. पु. ब. व., पीड़ित होते ही रहेंगे।

तनयाविश्लेषदुःखैः – तनयायाः विश्लेषस्य दुःखैः, षष्ठी तत्पुरुष समास, पुत्री के वियोग से जनित दुःखों से।

ययातेः – ययाति नामक एक प्रसिद्ध चंद्रवंशी राजा था, जो दुष्यंत का पूर्वज था।

शर्मिष्ठा – राजा ययाति की पत्नी का नाम था।

क्लृप्तधिष्ण्याः – क्लृप्तं रचितं धिष्ण्यं स्थानम् येषां ते बहुव्रीहि समास, स्थापित, प्रतिष्ठित।

समिद्वन्तः	–	समिधाओं से युक्त। जिनमें समिधाएँ (लकड़ियाँ) पड़ी हैं।
प्रान्तसंस्तीर्णदर्भाः	–	प्रान्ते, उपान्ते, संस्तीर्णाः, आस्तृताः, दर्भाः, कुशाः येषाम्, ते, बहुव्रीहि समास, किनारे पर बिछे हुए कुशों से युक्त।
अपघ्नन्तः	–	नाशयन्तः, नष्ट करती हुई।
वैतानाः वह्नयः	–	यज्ञ की अग्नियाँ।
पावयन्तु	–	(पूञ् + णिच् + लोट् + प्र. पु. ब. व.) पवित्र करें।
नादत्ते	–	न + आदत्ते, आङ् + दा + लट् – प्र. पु. ए. व., ग्रहण नहीं करती है।
प्रियमण्डनापि	–	प्रियं मण्डनं यस्याः सा, प्रियमण्डन + टाप्, शृङ्गार प्रिय होने पर भी।
कुसुमप्रसूतिसमये	–	कुसुमानां प्रसूतेः समये। पुष्प की उत्पत्ति के समय में।
अनुज्ञायताम्	–	अनु + ज्ञा + लोट् (भाववा०) – प्र. पु. ए. व., आज्ञा दीजिए, विदा कीजिए।
ओदकान्तम्	–	आ + उदक + अन्तम्, जलाशय-तट-पर्यन्त। प्रिय व्यक्ति के पीछे वहीं तक जाना चाहिए, जहाँ तक जलाशय हो।
संदिश्य	–	सम् + दिश् + क्त्वा (ल्यप्), संदेश कह करके।
प्रतिगन्तुम् अर्हसि	–	लौट सकते हैं।
प्रतिगन्तुम्	–	प्रति + गम् + तुमुन्।
अर्हसि	–	अर्ह् धातु + लट् + प्र. पु. ए. व.।
पुरस्कृत्य	–	पुरस् (अव्यय) + कृ + क्त्वा (ल्यप्) आगे करके।
संयमधनान्	–	संयम एव धनं येषाम् ते संयमधनाः तान्, संयम ही धन है जिनका।
कथमप्यबान्धवकृताम्	–	कथम् अपि + अबान्धवकृताम्। जो बंधु-बांधवों द्वारा स्थापित नहीं की गई है।
सामान्यप्रतिपत्तिपूर्वकम्	–	(अन्य पत्नियों के समान सामान्य), व्यवहारपूर्वक।
भाग्यायत्तम्	–	भाग्यस्य आयत्तम् (षष्ठी तत्पुरुष), भाग्य के अधीन।

अभ्यासः

1. संस्कृतेन उत्तरं दीयताम्
   (क) अयं पाठः कस्मात् नाटकात् संगृहीतः?
   (ख) तरुभिः कानि कानि वस्तूनि शकुन्तलायै दत्तानि?
   (ग) शकुन्तलायाः पतिगृहगमनं विचार्य महर्षिकाश्यपस्य दशा कीदृशी जाता?
   (घ) महर्षिणा काश्यपेन शकुन्तलायै का आशीः दत्ता?
   (ङ) शकुन्तलायाः उत्सवः कदा भवति?
   (च) स्निग्धः जनः कं देशं यावत् अनुगन्तव्यः?
   (छ) प्रियमण्डनापि शकुन्तला पल्लवं किं नादत्ते?

2. अधोलिखितपदानाम् अर्थं लिखित्वा स्ववाक्येषु प्रयोगं कुरुत
   क्षौमम्, आभरणम्, किसलयः, चक्षुषा, सुतम्, स्नेहेन, याति, श्रूयते, आज्ञापयतु।

3. अधोलिखितपदेषु प्रकृतिप्रत्ययविभागं कुरुत
   अनुभवितव्या, उत्तीर्णः, यास्यति, उपस्थितः, पातुम्, याति, प्रतिगन्तुम्, विचिन्त्य, दृश्या।

4. अधोलिखितपदानां सन्धिविच्छेदं कुरुत
   कुसुमान्याहरत, चरणोपभोगसुलभः, एह्येहि, स्नानोत्तीर्णः इतः इतः, तपोवनम्, सेयम्, भाग्यायत्तम्, पातुं न।

5. अधोलिखितपदानां नामनिर्देशपूर्वकं समास-विग्रहं कुरुत
   इन्दुपाण्डुः, चरणोपभोगसुलभः, स्नानोत्तीर्णः, चिन्ताजडम्,
   अरण्यौकसः, प्रियमण्डना, कुसुमप्रसूतिसमये, सरस्तीरम्, मद्वचनात्।

6. निम्नलिखितश्लोकेषु प्रयुक्तानामलङ्काराणां नामानि लिखत–
   (क) क्षौमं केनचित् ______ प्रतिद्वंद्विभिः।
   (ख) यास्यत्यद्य ______ दुःखैर्नवैः।
   (ग) पातुं न प्रथमं ______ सर्वैरनुज्ञायताम्।

चतुर्थः पाठः

लक्ष्म्याः प्रभावः

प्रस्तुत पाठ महाकवि बाणभट्ट द्वारा विरचित सर्वोत्तम गद्यकाव्य "कादम्बरी" नामक कथा से संकलित किया गया है। गुरुकुल से विद्याध्ययन पूर्ण करके राजधानी लौटे राजा तारापीड के पुत्र युवा चन्द्रापीड को 'युवराज' पद पर अभिषेक से पूर्व मन्त्री शुकनास यथोचित उपदेश देते हुए, राजलक्ष्मी एवं यौवन के मदजनित विकारों का वर्णन करते हुए, उनसे दूर रहने का कालोचित उपदेश देते हैं, जो सार्वकालिक रूप से ग्राह्य है। नीतिकारों ने भी कहा है--

यौवनं धनसम्पत्तिः प्रभुत्वमविवेकिता।
एकैकमप्यनर्थाय किमु यत्र चतुष्टयम्।।

शास्त्रों के सम्यक् अभ्यास से विमलमति गुरूजनों के उपदिष्ट पथ का अनुसरण करने वाला विवेकी पुरुष ही यौवन एवं राजलक्ष्मी को प्राप्त करके भी दुर्गुणों से सर्वथा असम्पृक्त रह सकता है।

तात ! चन्द्रापीड ! विदितवेदितव्यस्य अधीतसर्वशास्त्रस्य ते नाल्पमपि उपदेष्टव्यम् अस्ति। केवलं च निसर्गतः अतिगहनं तमो यौवनप्रभवम्। अपरिणामोपशमो दारुणो लक्ष्मीमदः।

यौवनारम्भे च प्रायः शास्त्रजलप्रक्षालननिर्मलापि कालुष्यमुपयाति बुद्धिः। इन्द्रियहरिणहारिणी च सततदुरन्तेयमुपभोगमृगतृष्णिका। गुरुपदेशश्च नाम पुरुषाणामखिलमलप्रक्षालनक्षममजलं स्नानम्। विरला हि तेषामुपदेष्टारः।

आलोकयतु तावत् कल्याणाभिनिवेशी लक्ष्मीमेव प्रथमम्। इयं हि लब्धाऽपि खलु दुःखेन परिपाल्यते। न परिचयं रक्षति नाभिजनमीक्षते। न रूपमालोकयते। न कुलक्रममनुवर्तते। न शीलं पश्यति। न वैदग्ध्यं गणयति। न श्रुतमाकर्णयति। न धर्ममनुरुध्यते। न त्यागमाद्रियते। न विशेषज्ञतां विचारयति। नाचारं पालयति।

न क्वचिदपि निर्भरमाबध्नाति पदम्। मधुपानमत्तेव परिस्खलति। सरस्वतीपरिगृहीतम् ईर्ष्ययेव नालिङ्गति। जनं गुणवन्तमपवित्रमिव न स्पृशति। उदारसत्त्वम-मङ्गलमिव न बहु मन्यते। शूरं कण्टकमिव परिहरति। दातारं दुःस्वप्नमिव न स्मरति। विनीतं पातकिनमिव नोपसर्पति। मनस्विनमुन्मत्तमिव उपहसति। यथा यथा चेयं चपला दीप्यते तथा तथा दीपशिखेव कज्जलमलिनमेव कर्म केवलमुद्वमति।

एवंविधयापि चानया दुराचारया कथमपि दैववशेन परिगृहीता विक्लवा भवन्ति राजानः, सर्वाविनयाधिष्ठानतां च गच्छन्ति। दर्शनप्रदानमपि अनुग्रहं गणयन्ति। दृष्टिपातमपि उपकारपक्षे स्थापयन्ति। आज्ञामपि वरप्रदानं मन्यन्ते। मिथ्यामाहात्म्य गर्वनिर्भराश्च न प्रणमन्ति देवताभ्यः। न मानयन्ति मान्यान्। नाभिवादयन्ति अभिवादनार्हान्। नाभ्युत्तिष्ठन्ति गुरून्। जरावैक्लव्यप्रलपितमिति पश्यन्ति वृद्धोपदेशम्। आत्मप्रज्ञापरिभव इत्यसूयन्ति सचिवोपदेशाय। कुप्यन्ति हितवादिने। सर्वथा तमभिनन्दन्ति, तमालपन्ति, तं पार्श्वे कुर्वन्ति, तं सम्वर्धयन्ति तेन सह सुखमवतिष्ठन्ते, तस्मै ददति, तं मित्रतामुपजयन्ति, तस्य वचनं शृण्वन्ति, तं बहु मन्यन्ते, यः अहर्निशम् अनवरतमुपर-चिताञ्जलिः अधिदैवतमिव विगतान्यकर्त्तव्यः स्तौति। किं वा तेषां साम्प्रतं, येषामतिनृशंसप्रायोपदेशनिर्घृणं कौटिल्यशास्त्रं प्रमाणम्।

शब्दार्थाः टिप्पण्यश्च

विदितवेदितव्यस्य — विदितं वेदितव्यं येन, तस्य। जिसने ज्ञातव्य को जान लिया है।

अधीतसर्वशास्त्रस्य — अधीतं सर्वं शास्त्रं येन, तस्य। जिसने समस्त शास्त्र का अध्ययन कर लिया है।

यौवनप्रभवम् — युवावस्थाजन्य।

अपरिणामोपशमः — न विद्यते परिणामेऽपि उपशमो यस्य। वृद्धावस्था में भी उतरता नहीं है।

शास्त्रजलप्रक्षालननिर्मला— शास्त्रमेव जलम् शास्त्रजलम्, तेन प्रक्षालनेन निर्मला। शास्त्ररूप जल से धोने से निर्मल।

इन्द्रियहरिणहारिणी — इन्द्रियाणि एव हरिणाः, तेषां हारिणी। इन्द्रियरूपी हरिणों को हरनेवाली।

सततदुरन्ता — सततं = निरन्तरं, दुरन्ता = दुःखावसाना। हमेशा परिणाम में (अन्त में) दुःखद होती है।

उपभोगमृगतृष्णिका — उपभोग एव मृगतृष्णिका। विषयभोग रूपी मृगतृष्णा।

कल्याणाभिनिवेशी — कल्याणे = मङ्गले, अभिनिवेशी = आग्रही।

निर्भरम् — निश्चल, स्थिरता पूर्वक।

आबध्नाति पदम् — पैर टिकाती है।

मधुपानमत्तेव — मधुपानेनमत्ता इव, मद्यपान से मतवाली सी।

परिस्खलति — लड़खड़ाती है।

दीपशिखेव — दीपशिखा + इव। दीपक की लौ के समान।

सर्वाविनयाधिष्ठानताम् — सर्वेषाम् अविनयानाम् अधिष्ठानताम्, सभी प्रकार के अविनयों (दुष्कृत्यों) के निवास-स्थान।

मिथ्यामाहात्म्यगर्वनिर्भराः— मिथ्या = वृथा यो माहात्म्यगर्वः = माहात्म्याभिमानस्तेन निर्भराः भूताः। झूठे बड़प्पन के अभिमान से फूले हुए।

अभ्युत्तिष्ठन्ति — अभि + उत् + स्था धातु + लट् प्र. पु. बहुवचन। अभ्युत्थानं कुर्वन्ति। उठते हैं।

जरावैक्लव्यप्रलपितम् – जरा = वृद्धता, तस्या वैक्लव्यम् विफलता, तेन प्रलपितम्। सठियाने का प्रलाप।

उपरचिताञ्जलिः – संयोजितकरपुटः। हाथ जोड़े हुए।

विगतान्यकर्त्तव्यः – विगतम् अन्यकर्त्तव्यं यस्य। दूसरे कर्त्तव्य कार्यों को छोड़े हुए।

अतिनृशंसप्रायोपदेश-निर्घृणम् – अतिनृशंसप्रायः = अतिनिर्दयता बहुलः, उपदेशः= शिक्षा, तेन निर्घृणम् = निर्दयम्। अतिक्रूर कर्मों के उपदेश से भरा हुआ, निर्दय।

आत्मप्रज्ञापरिभवः – आत्मनः = स्वस्य या प्रज्ञा = बुद्धिः, तस्याः परिभवः = निरादरः। अपनी बुद्धि का निरादर।

अभ्यासः

1. **संस्कृतेन उत्तरं दीयताम्**
   - (क) अयं पाठः कस्माद् ग्रन्थात् संकलितः ?
   - (ख) कः अस्य (ग्रन्थस्य) रचयिता ?
   - (ग) यौवनारम्भे कीदृशी बुद्धिः प्रायः कालुष्यमुपयाति ?
   - (घ) सततदुरन्ता का कथिता ?
   - (ङ) यथा यथा लक्ष्मीः दीप्यते तथा तथा किम् उद्‌भवति ?
   - (च) किम् अजलं स्नानम् उक्तम् ?
   - (छ) लक्ष्म्या परिगृहीता राजानः कां गच्छन्ति ?
2. **रेखाङ्कितं पदम् आधृत्य संस्कृतेन प्रश्ननिर्माणं क्रियताम् ?**
   - (क) इयं हि लब्धाऽपि खलु <u>दुःखेन</u> परिपाल्यते।
   - (ख) इन्द्रियहरिणहारिणी इयम् <u>उपभोगमृगतृष्णिका</u>।
   - (ग) <u>अधीतसर्वशास्त्रस्य</u> नाल्पमपि उपदेष्टव्यम् अस्ति।
   - (घ) <u>अपरिणामोपशमः</u> लक्ष्मीमदः।
   - (ङ) लक्ष्मीः <u>शूरं</u> कण्टकमिव परिहरति।
   - (च) राजानः कुप्यन्ति <u>हितवादिने</u>।
   - (छ) लक्ष्म्याः परिगृहीताः <u>राजानः</u> दर्शनप्रदानमपि अनुग्रहं गणयन्ति।

3. अधोलिखितेभ्यः अर्थेभ्यः कानि पदानि पाठे प्रयुक्तानि यथा – अहोरात्रम् – अहर्निशम्

(क) इदानीम् ______________ ।

(ख) समीपे गच्छति ______________ ।

(ग) स्वभावतः ______________ ।

(घ) संयोजितकरपुटम ______________ ।

(ङ) निरादरः ______________ ।

(च) चञ्चला ______________ ।

4. सप्रसंग व्याख्यां कुरुत

(क) सरस्वतीपरिगृहीतम् ईर्ष्ययेव नालिङ्गति।

(ख) मिथ्यामाहात्म्यगर्वनिर्भराः न प्रणमन्ति देवताभ्यः।

(ग) गुरूपदेशो नाम अखिलमलप्रक्षालनक्षमम् अजलं स्नानम्।

(घ) न परिचयं रक्षति, नाभिजनम् ईक्षते।

5. उदाहरणमनुसृत्य समस्तपदानि रचयत

विग्रहः	*समस्तपदम्*
यथा–विदितं वेदितव्यं येन सः	विदितवेदितव्यः।
(क) आधीतं सर्वशास्त्रं येन, सः	______________ ।
(ख) न विद्यते परिणामेऽपि उपशमः यस्य सः	______________ ।
(ग) शास्त्रम् एव जलम्, तेन प्रक्षालनेन निर्मला	______________ ।
(घ) उपभोग एव मृगतृष्णिका	______________ ।
(ङ) अहश्च निशाच	______________ ।
(च) उपरचिता अञ्जलिः येन सः	______________ ।

6. अधोलिखितानां कर्मपदानां क्रियापदानि पाठात् विचित्य लिखत

(क) न रूपम् ______________ ।

(ख) न आचारं ______________ ।

(ग) दातारं दुःस्वप्नमिव न ______________ ।

(घ) मनस्विनम् उन्मत्तमिव ______________ ।

(ङ) न धर्मम् ______________ ।

(च) न क्वचित् निर्भरं पदम् ______________ ।

7. अधः उदाहरणानुसारं उपपदविभक्तिं प्रयुज्य वाक्यद्वयं रच्यताम्

(क) यथा-कुप्यन्ति हितवादिने (कुप् धातुप्रयोगे चतुर्थीविभक्तिप्रयोगः)

1. ________ ।

2. ________ ।

(ख) यथा – तस्मै ददति (दा धातुयोगे चतुर्थीविभक्तिप्रयोगः)

1. ________ ।

2. ________ ।

(ग) सचिवोपदेशाय असूयन्ति। (असूय् धातुयोगे चतुर्थीविभक्तिप्रयोगः)

1. ________ ।

2. ________ ।

(घ) तेन सह सुखमवतिष्ठन्ते (सहयोगे तृतीयाविभक्तिप्रयोगः)

1. ________ ।

2. ________ ।

8. लक्ष्म्याः चरित्रं रिक्तस्थानपूर्तिं कृत्वा लिखत

इयं लक्ष्मीः ________ खलु दुःखेन परिपाल्यते। न कुलक्रमम् न ________ पश्यति। न वैदग्ध्यं ________ । न ________ आकर्णयति। न धर्मम् ________ । न ________ आद्रियते। न विशेषज्ञतां ________ । मधुपानमत्तेव ________ । जनं ________ न स्पृशति। उदारसत्त्वम् अमङ्गलम् इव न बहु ________ । विनीतं ________ नोपसर्पति। एवंविधयापि चानया ________ कथमपि दैववशेन ________ राजानः विक्लवाः भवन्ति ________ च गच्छन्ति।

पञ्चमः पाठः

नीतिश्लोकाः

संस्कृत वाङ्मय सूक्तियों एवं सदुपदेशों का भण्डार है। प्रायः सभी काव्यग्रंथों में भारतीय संस्कृति एवम् उसके उच्च उदात्त जीवनमूल्यों का संदेश प्राप्त होता है। जीवन में सर्वविध अभ्युदय, सौख्य, शांति एवं सामाजिक समरसता की प्राप्ति के अचूक सूत्र सर्वत्र अनुस्यूत है, जिनका अनुसरण एवम् अनुपालन कर मानव अपने सत्कर्ममय जीवन में आनंदोपभोग करता हुआ अपने चरमलक्ष्य की प्राप्ति की ओर सहज ही उन्मुख हो सकता है। कवि भर्तृहरि विरचित *'नीतिशतकम्'* एक ऐसा ही अमूल्य ग्रंथ है, जिसमें विविध राजनीतियों का काव्यात्मक वर्णन है। इसके साथ ही पञ्चतन्त्र एवं हितोपदेश आदि ग्रंथों में विविध कथाओं के माध्यम से नीतियों का उपदेश दिया गया है। यहाँ नीतिशतकम् पञ्चतन्त्र एवं हितोपदेश ग्रंथों से ऐसे ही 11 श्लोकों का चयन किया गया है। इनमें विद्यामहिमा, मैत्री, दान, सत्सङ्ग, सन्मित्र, सत्पुरुषलक्षण का मार्मिक वर्णन है।

अज्ञः सुखमाराध्यः सुखतरमाराध्यते विशेषज्ञः।
ज्ञानलवदुर्विदग्धं ब्रह्मापितं नरं न रञ्जयति।। 1।।

यदा किञ्चिज्ज्ञोऽहं द्विप इव मदान्धः सममवं
तदा सर्वज्ञोऽस्मीत्यभवदवलिप्तं मम मनः।
यदा किञ्चित् किञ्चिद् बुधजनसकाशादवगतं
तदा मूर्खोऽस्मीति ज्वर इव मदो मे व्यपगतः।। 2।।

विद्या नाम नरस्य रूपमधिकं प्रच्छन्नगुप्तं धनं
विद्या भोगकरी यशःसुखकरी विद्या गुरूणां गुरुः।
विद्या बन्धुजनो विदेशगमने विद्या परा देवता
विद्या राजसु पूज्यते न तु धनं विद्याविहीनः पशुः।। 3।।

जाड्यं धियो हरति सिञ्चति वाचि सत्यं
मानोन्नतिं दिशति पापमपाकरोति।
चेतः प्रसादयति दिक्षु तनोति कीर्तिं
सत्सङ्गतिः कथय किं न करोति पुंसाम्।। 4।।

दानं भोगो नाशस्तिस्रो गतयो भवन्ति वित्तस्य।
यो न ददाति न भुङ्क्ते तस्य तृतीया गतिर्भवति।। 5।।

निन्दन्तु नीतिनिपुणा यदि वा स्तुवन्तु
लक्ष्मीः समाविशतु गच्छतु वा यथेष्टम्।
अद्यैव वा मरणमस्तु युगान्तरे वा
न्याय्यात्पथः प्रविचलन्ति पदं न धीराः।। 6।।

पापान्निवारयति योजयते हिताय
गुह्यं निगूहति गुणान् प्रकटीकरोति।
आपद्गतं च न जहाति ददाति काले
सन्मित्रलक्षणमिदं प्रवदन्ति सन्तः।। 7।।

दुर्जनः परिहर्तव्यो विद्ययालङ्कृतोऽपि सन्।
मणिना भूषितः सर्पः किमसौ न भयङ्करः।। 8।।

विपदि धैर्यमथाभ्युदये क्षमा
सदसि वाक्पटुता युधि विक्रमः।
यशसि चाभिरुचिर्व्यसनं श्रुतौ
प्रकृतिसिद्धमिदं हि महात्मनाम्।।9।।

आरम्भगुर्वी क्षयिणी क्रमेण
लघ्वी पुरा वृद्धिमती च पश्चात्।
दिनस्य पूर्वार्धपरार्धभिन्ना
छायेव मैत्री खलसज्जनानाम्।। 10।।

जयन्ति ते सुकृतिनो रससिद्धाः कवीश्वराः।
नास्ति येषां यशःकाये जरामरणजं भयम्।। 11।।

शब्दार्थाः टिप्पण्यश्च

अज्ञः	– न जानाति इति अज्ञः। अज्ञानी।
आराध्यः	– आराधनीय, समझाया जा सकता है, मनाया जा सकता है।
विशेषज्ञः	– विशेषज्ञानवान्, विशेषेण जानाति।
ज्ञानलवदुर्विदग्धम्	– ज्ञानस्य लवेन दुर्विदग्धम्, ज्ञान के लेशमात्र से अपने को बहुज्ञ समझने वाला।
किञ्चिज्ज्ञः	– कुछ-कुछ जाननेवाला, अल्प।
मदान्धः	– मदेन अंधः, घमण्ड से अंधा, मतवाला।
समभवम्	– सम् + भू + लङ् + उ. पु. ए. व।
सर्वज्ञोऽस्मीत्यभवदवलिप्तम्	– सर्वज्ञः + अस्मि + इति + अभवत् + अवलिप्तम्। मैं सर्वज्ञ हूँ यह समझकर गर्वित।
अवलिप्तम्	– दृप्त, अव + लिप् + क्त।
व्यपगतः	– वि + अप् + गम् + क्त, दूर हो गया।
यशःसुखकरी	– यशांसि सुखानि च करोति तच्छीला। यश और सुख प्रदान करने वाला
जाड्यम्	– जडस्य भावः, जड + ष्यञ्। जडता।
मानोन्नतिम्	– सम्मान की वृद्धि।
पापमपाकरोति	– पापम् अपाकरोति, पाप को दूर करती है।
तनोति	– तन् + लट्, प्र. पु. ए. व.। फैलाती है।
निन्दन्तु	– णिदि (निन्द्) + लोट् प्र. पु. ब. व., निंदा करें।

स्तुवन्तु	–	ष्टु (स्तु) + लोट्, प्र. पु. ब. व.। स्तुति करें, प्रशंसा करें।
न्याय्यात्	–	न्याय से युक्त।
पथः	–	मार्ग से।
पापान्निवारयति	–	पापात् + निवारयति, पाप कर्म से दूर हटाता है।
आपद्गतम्	–	विपत्ति में फँसे हुए को।
न जहाति	–	न त्यजति, नहीं छोड़ता है।
सन्मित्रलक्षणम्	–	सत् + मित्रलक्षणम्, सतो मित्रस्य लक्षणम्, अच्छे मित्र का लक्षण।
प्रवदन्ति	–	प्र + वद् + लट्, प्र. पु. ब. व.। कथयन्ति, बताते हैं।
परिहर्तव्यः	–	परि + हृ + तव्य। छोड़ना चाहिए।
विद्ययालङ्कृतोऽपि	–	विद्यया + अलङ्कृतः + अपि, विद्या से अलङ्कृत (सम्पन्न) भी।
विपदि	–	विपत्तौ, विपत्ति में।
अभ्युदये	–	उन्नतौ, उन्नति में।
युधि	–	युद्धे, युद्धभूमि में।
व्यसनम्	–	आसक्ति।
श्रुतौ	–	वेदादि शास्त्राभ्यास में।
प्रकृतिसिद्धम्	–	स्वभाव से सिद्ध।
आरम्भगुर्वी	–	आरम्भे गुर्वी, आरंभ में बड़ी (घनिष्ठ)।
क्षयिणी	–	क्षीण होने वाली, घटने वाली।
पूर्वार्ध-परार्द्ध-भिन्ना	–	पूर्वं च तत् अर्द्धम् – पूर्वार्द्धम् – कर्मधारय। परं च तत् अर्द्धम् – परार्द्धम् – पूर्वार्द्धं च परार्द्धं च पूर्वार्द्धपरार्द्धे, द्वन्द्वसमास, ताभ्यां भिन्ना पञ्चमी तत्पुरुष। पूर्वार्द्ध और परार्द्धभेद से भिन्न।
छायेव	–	छाया + इव, परछाई के समान।
खलसज्जनानाम्	–	खलाश्च सज्जनाश्च खलसज्जनास्तेषाम्। दुर्जनों और सज्जनों की।

अभ्यासः

1. संस्कृतेन उत्तरं दीयताम्

(क) ब्रह्मापि कीदृशं नरं रञ्जयितुं न शक्नोति ?
(ख) विद्या कुत्र पूज्यते ?
(ग) धियो जाड्यं का हरति ?
(घ) वित्तस्य काः तिस्रः गतयः भवन्ति ?
(ङ) धीराः कस्मात् पदं न प्रविचलन्ति ?
(च) दिनस्य पूर्वार्धपरार्धभिन्ना छायेव केषां मैत्री ?
(छ) विद्ययाऽलङ्कृतोऽपि कः परिहर्तव्यः ?

2. रेखाङ्कितपदानि आधृत्य संस्कृतेन प्रश्ननिर्माणं कुरुत

(क) सुकृतिनां यशःकाये जरामरणजं भयं नास्ति।
(ख) महात्मनाम् अभ्युदये क्षमा भवति।
(ग) मणिना भूषितोऽपि सर्पः भयङ्करः।
(घ) सत्सङ्गतिः पुंसां कीर्तिं दिक्षु तनोति।
(ङ) विद्याविहीनः पशुः।
(च) सन्मित्रं पापात् निवारयति।
(छ) यो न ददाति न भुङ्क्ते तस्य तृतीय गतिर्भवति।

3. उदाहरणम् अनुसृत्य पदानि रचयत

यथा –प्र + छद् + क्त = प्रच्छन्नः

(क) दह् + क्त = ____________
(ख) अव + लिप् + क्त = ____________
(ग) परि + हृ + क्त = ____________
(घ) वि + हा + क्त = ____________
(ङ) वि + अस् + क्त = ____________
(च) भिद् + क्त = ____________
(छ) गुह् + क्त = ____________

4. अधः 'क' स्तम्भस्य पङ्क्त्या सह 'ख' स्तम्भात् समुचितां पंक्तिं विचित्य मेलयत

'क' स्तम्भः	*'ख' स्तम्भः*
(क) दानं भोगो नाशः	(क) पापमपाकरोति।
(ख) सदसि वाक्पटुता	(ख) रससिद्धाः कवीश्वराः।
(ग) आरम्भगुर्वी क्षयिणी क्रमेण	(ग) अवलिप्तं मम मनः।
(घ) जयन्ति ते सुकृतिनः	(घ) सुखतरमाराध्यते विशेषज्ञः।
(ङ) मानोन्नतिं दिशति	(ङ) तिस्रो गतयो भवन्ति वित्तस्य।
(च) तदा सर्वज्ञोऽस्मीत्यभवत्	(च) युधि विक्रमः।
(छ) अज्ञः सुखमाराध्यः	(छ) लघ्वी पुरा वृद्धिमती च पश्चात्।

5. अधः पाठे प्रयुक्तानां छन्दसां नामानि लिखितानि। केषाञ्चित् त्रयाणां छन्दसाम् उदाहरणानि पाठात् विचित्य लिखत

(क) शार्दूलविक्रीडितम्

(ख) शिखरिणी

(ग) वसन्ततिलका

(घ) अनुष्टुप्

(ङ) उपजातिः

6. विलोमपदानि पाठात् विचित्य लिखत

	विलोमपदानि
(क) स्तुवन्तु	___________
(ख) गच्छतु	___________
(ग) युगान्तरे	___________
(घ) सम्पदि	___________
(ङ) पश्चात्	___________
(च) सज्जनानाम्	___________
(छ) पुण्यात्	___________

7. अधोलिखितानां श्लोकानां रिक्तस्थानानि पूरयत

(क) अज्ञः सुखम् ________ सुखतरम् ________ विशेषज्ञः।
ब्रह्मापि नरं न ________ ।।

(ख) यदा किञ्चित् किञ्चिद् ________ ।
तदा मूर्खोऽस्मीति ________ इव मदो मे ________ ।।

(ग) ________ ते सुकृतिनो ________ कवीश्वराः।
नास्ति येषां ____ ____ जरामरणजं ________ ।।

8. आशयं स्पष्टीकुरुत

(क) विद्याविहीनः पशुः।
(ख) सत्सङ्गतिः कथय किं न करोति पुंसाम्।
(ग) न्यायात्पथः प्रविचलन्ति पदं न धीराः।
(घ) प्रकृतिसिद्धमिदं हि महात्मनाम्।
(ङ) छायेव मैत्री खलसज्जनानाम्।

षष्ठः पाठः

यथा बीजं तथा फलम्

प्रस्तुत पाठ पञ्चतन्त्र के 'लब्धप्रणाश' नामक चतुर्थ तन्त्र की प्रथम कथा (गङ्गदत्तप्रियदर्शनयोः) का संक्षेप है। इसमें गङ्गदत्त नामक मेढक द्वारा अपने कुटुम्बियों से बदला लेने की भावना से प्रियदर्शन नामक सर्प को बुलाकर उन्हें खिला दिए जाने की दुष्टता का निरूपण किया गया है, जिसके फलस्वरूप सर्प गङ्गदत्त के भी बाल-बच्चों को खा जाता है, ठीक ही कहा गया है – जो जैसा बीज बोता है, वैसा ही फल पाता है।

कस्मिंश्चित् कूपे गङ्गदत्तो नाम मण्डूकराजः प्रतिवसति स्म। स कदाचिद् दायादैरुद्वेजितोऽरघट्टघटीमारुह्य निष्क्रान्तः। अथ तेन चिन्तितं यत् 'कथं तेषां दायादानां मया प्रत्युपकारः कर्त्तव्यः ?' एवं चिन्तयन् बिले प्रविशन्तं प्रियदर्शनाभिधं कृष्णसर्पमपश्यत्। तं दृष्ट्वा भूयोऽप्यचिन्तयत् यत् 'एनं तत्र कूपे नीत्वा सकलदायादानामुच्छेदं करोमि।' उक्तं च

शत्रुमुन्मूलयेत्प्राज्ञस्तीक्ष्णं तीक्ष्णेन शत्रुणा।
व्यथाकरं सुखार्थाय कण्टकेनैव कण्टकम्।।

एवं विभाव्य बिलद्वारं गत्वा तमाहूतवान् - एहि, एहि प्रियदर्शन, एहि। "तच्छ्रुत्वा सर्पश्चिन्तयामास" य एष मामाह्वयति स स्वजातीयो न भवति। यतो नैषा सर्पवाणी। तदत्रैव दुर्गे स्थितस्तावद्वेद्मि-कोऽयं भविष्यति ? "आह च-" भोः को

भवान् ? "स आह -" अहं गङ्गदत्तो नाम मण्डूकाधिपतिस्त्वत्सकाशे मैत्र्यर्थमभ्यागतः। "तच्छ्रुत्वा सर्प आह -" भो, अश्रद्धेयमेतद् यत् "तृणानां वह्निना सह संगमः।" गङ्गदत्त आह - भोः, सत्यमेतत्। स्वभाववैरी त्वमस्माकम् परं परपरिभवात् प्राप्तोऽहं ते सकाशम्। "सर्प आह -" कथय, कस्मात्ते परिभवः ? "स आह -" दायादेभ्यः। "सोऽप्याह-" क्व ते आश्रयः- वाप्यां, कूपे, तडागे, ह्रदे वा ? "तत् कथय स्वाश्रयम्।" तेनोक्तम्-"पाषाणचयनिबद्धे कूपे। "सर्प आह-" अहो, अपदा वयम्। तन्नास्ति मे तत्र प्रवेशः। प्रविष्टस्य च, स्थानं नास्ति, यत्र स्थितस्तव दायादान् व्यापादयामि। तद् गम्यताम्।

गङ्गदत्त आह - "भोः, समागच्छ त्वम्। अहं सुखोपायेन तत्र तव प्रवेशं कारयिष्यामि। तथा तस्य मध्ये जलोपान्ते रम्यतरं कोटरमस्ति तत्र स्थितस्त्वं लीलया दायादान् व्यापादयिष्यसि।"

तच्छ्रुत्वा सर्पो व्यचिन्तयत्-"अहं तावत् परिणतवयाः कदाचित् कथंचिन्मूषकमेकं प्राप्नोमि। तत् सुखावहो जीवनोपायोऽयमनेन कुलाङ्गारेण मे दर्शितः। तद् गत्वा तान् मण्डूकान् भक्षयामि" इति।

एवं विचिन्त्य तमाह- "भोः गङ्गदत्त, यद्येवं तदग्रे भव, येन तत्र गच्छावः।" गङ्गदत्त आह- "भोः प्रियदर्शन, अहं त्वां सुखोपायेन तत्र नेष्यामि, स्थानं च दर्शयिष्यामि। परं त्वयाऽस्मत्परिजनो रक्षणीयः। केवलं यानहं तव दर्शयिष्यामि, त एव भक्षणीयाः" इति। सर्प आह- "साम्प्रतं त्वं मे मित्रं जातम्। तन्न भेतव्यम्। तव वचनेन भक्षणीयास्ते दायादाः।" एवमुक्त्वा बिलान्निष्क्रम्य तमालिङ्ग्य च, तेनैव सह प्रस्थितः।

अथ कूपमासाद्यारघट्टघटिकामार्गेण सर्पस्तेन सह तस्यालयं

गतः। ततश्च गङ्गदत्तेन कृष्णसर्पं कोटरे धृत्वा दर्शितास्ते दायादाः। ते च तेन शनैः शनैर्भक्षिताः। अथ मण्डूकाभावे सर्पेणाभिहितम् "भद्र, निःशेषितास्ते रिपवः। तत् प्रयच्छ अन्यन्मे किञ्चित् भोजनं यतोऽहं त्वयात्रानीतः।" गङ्गदत्त आह-"भद्र, कृतं त्वया मित्रकृत्यं तत्साम्प्रतम् घटिकायन्त्रमार्गेण गम्यताम्" इति। सर्प आह "भो गङ्गदत्त ! न सम्यगभिहितं त्वया। कथमहं तत्र गच्छामि ? मदीयबिलदुर्गमन्येन रुद्धं भविष्यति। तस्मादत्रस्थस्य मे मण्डूकमेकैकं स्ववर्गीयं प्रयच्छ। नो चेत् सर्वानपि भक्षयिष्यामि" इति।

तच्छ्रुत्वा गङ्गदत्तो व्याकुलमना व्यचिन्तयत्-"अहो, किमेतन्मया कृतं सर्पमानयता ? तद् यदि निषेधयिष्यामि तत् सर्वानपि भक्षयिष्यति ?"

एवं चिन्तयतस्तस्य तेन सर्पेण शनैः शनैः सकलमपि मण्डूककुलम् यथाकालं कवलितम्।

साध्विदमुच्यते-

यो यद् वपति बीजं हि लभते तादृशं फलम्।।

शब्दार्थाः टिप्पण्यश्च

कस्मिंश्चित् कूपे	–	कस्मिन् + चित्, (अव्यय), किसी कुँए में।
प्रतिवसति स्म	–	प्रति + वस् + लट् + प्र. पु. ए. व., स्म – अव्यय (भूतकाल द्योतक)। निवास किया करता था।
कदाचित्	–	(अव्यय), कभी।
दायादैः	–	दायं भागम् अदन्ति, खादन्ति इति दायादाः तैः, (दाय + अद् + अच्), हिस्सा खाने वालों से (रिश्तेदारों से)।
उद्वेजितः	–	(उत् + विज् + णिच् + क्त) त्रस्त, क्षुब्ध, परेशान।
अरघट्टघटीम्	–	रहट में प्रयुक्त किया जाने वाला डोल।

आरुह्य – आङ् + रुह् + क्त्वा, ल्यप्, सवार होकर, चढ़कर।
निष्क्रान्तः – निस् + क्रम + क्त, निकल गया, बाहर चला गया।
प्रत्यपकारः – प्रति + अप + डुकृञ् + घञ्, अपकार के बदले में किया गया कार्य।
कर्त्तव्यः – डुकृञ् + तव्यत्, करना चाहिए।
चिन्तयन् – चिन्त् + णिच् + शतृ + पुँ प्र. ए. व., विचार करता हुआ।
प्रविशन्तम् – प्र + विश् + शतृ + पुँ. द्वि. ए. व., प्रवेश करने वाले को।
अपश्यत् – दृश् (पश्य्) + लङ् + प्र. पु. ए. व., देखा।
उच्छेदम् – उत् + छिद् + घञ् + द्वि. ए. व., विनाश को।
आहूतवान् – आङ् + ह्वे + क्तवत् – पुँ. प्र. ए. व., बुलाया।
आह्वयति – आङ् + ह्वे + लट् + प्र. पु. ए. व., बुलाता है, पुकारता है।
तावद्वेद्मि – तावत् + विद् + लट् + उ. पु. ए. व., तो जानता हूँ।
मैत्र्यर्थमभ्यागतः – मैत्री + अर्थम् + अभि + आङ् + गम् + क्त। मित्रता के लिए आया हुआ।
परिभवः – पराजय, अपमान।
वाप्याम् – बावड़ी में।
व्यापादयामि – मारता हूँ।
पाषाणचयनिबद्धे – पत्थरों को चुनकर बनाए गए (कुँए) में।
अपदाः – बिना पैरों वाले।
परिणतवयाः – (परिणतं वयः येषां ते, बहुव्रीहि समास) वृद्ध।
दर्शयिष्यामि – दृश् + णिच् + लृट् + उ. पु. ए. व., दिखाऊँगा।
कुलाङ्गारेण – कुल के विनाश के लिए अङ्गार (चिनगारी) के समान, अपने वंश को नष्ट करने वाले ने।
प्रस्थितः – प्र + स्था + क्त, प्रस्थान किया।
आसाद्य – आङ् + सद् + णिच् + क्त्वा + ल्यप्, पहुँचकर।
अभिहितम् – अभि + धा + क्त, कहा।
निःशेषिताः – समाप्त कर दिए।
स्ववर्गीयम् – अपनी जाति के।

अभ्यासः

1. **संस्कृतभाषया उत्तराणि लिखत**

(क) किं–नामधेयो मण्डूकराजः कूपे वसति स्म ?

(ख) मण्डूको बिले प्रविशन्तं सर्पं दृष्ट्वा किं चिन्तयति ?

(ग) मण्डूकस्य भयं केभ्यः आसीद् ?

(घ) केन मार्गेण सर्पो मण्डूकेन सह तस्यालयं गच्छति ?

(ङ) मण्डूकाभावे सर्पेण किमभिहितम् ?

(च) व्यथाकरं कण्टकं सुखाय केन उन्मूल्यते ?

(छ) कूपे सर्पसङ्कल्पं श्रुत्वा व्याकुलमना गङ्गदत्तः किम् अचिन्तयत् ?

2. **(क) रिक्तस्थानपूर्तिमाध्यमेन अधः सन्धिं / सन्धिच्छेदं कुरुत**

(क) एहि + एहि = ________ ।

(ख) ________ + ________ = नैषा।

(ग) तैः + ________ = तैरेव।

(घ) ________ + श्रुत्वा = तच्छ्रुत्वा।

(ङ) यदि + एवम् = ________ ।

(च) ________ + ________ = साध्विदम्।

(छ) कण्टकेन + एव ________ ।

(ख) अधः संयोगे रिक्तस्थानानि पूरयत

(क) अरघट्टघटीम् + आरुह्य = ________ ।

(ख) कृष्णसर्पम् + अपूरयत् = ________ ।

(ग) ________ + ________ = अश्रद्धेयमेतत्।

(घ) यान् + ________ = यानहम्।

(ङ) त्वम् + उक्त्वा = ________ ।

3. **उदाहरणमनुसृत्य समस्तपदानां विग्रहं कुरुत, समासनामापि च लिखत**

	समस्तपदम्	*विग्रहः*	*समासनाम*
उदाहरणम्–	व्याकुलमनाः	व्याकुलं मनः यस्य सः	बहुव्रीहि
(क)	प्रियदर्शनः	----------	----------
(ख)	कृष्णसर्पः	----------	----------
(ग)	सर्पवाणी	----------	----------
(घ)	परिणतवयाः	----------	----------
(ङ)	यथाकालम्	----------	----------
(च)	मण्डूककुलम्	----------	----------

4. **उदाहरणमनुसृत्य रिक्तस्थानानि पूरयित्वा पदानि रचयत**

उदाहरणम् – चिन्त् + शतृ, षष्ठी ए.व. = चिन्तयतः

(क) अभि + धा + क्त = ________

(ख) ________ + णिच् + ________ = दर्शितः

(ग) रक्ष् + अनीयर् = ________

(घ) ________ + क्त्वा = उक्त्वा

(ङ) निः + क्रम् + ल्यप् = ________

(च) भी + ________ = भेतव्यम्।

(छ) आ + ह्वे + क्तवत् = ________

5. **सप्रसङ्ग व्याख्यां कुरुत**

(क) अश्रद्धेयमेतत् यत् तृणानां वह्निना सह राङ्गमः।

(ख) कण्टकं कण्टकेनैव उन्मूल्यते।

(ग) यो यद् वपति बीजं लभते हि तादृशं फलम्।

6. अधोलिखितानि कथनानि कः कम् प्रति कथयति

	कथनम्	कः	कं प्रति
(क)	भोः! स्वभाववैरी त्वमस्माकं परं परपरिभवात् प्राप्तोऽहं ते सकाशम्।	______	______
(ख)	अपदा वयम्। तन्नास्ति मे तत्र प्रवेशः।	______	______
(ग)	भोः! समागच्छ त्वम्। अहं सुखोपायेन तत्र तव प्रवेशं कारयिष्यामि।	______	______
(घ)	साम्प्रतं त्वं मे मित्रं जातम्। तन्न गन्तव्यम्।	______	______
(ङ)	तस्मादत्रस्थस्य मे मण्डूकमेकैकं स्ववर्गीयं प्रयच्छ।	______	______

7. मजूषातः अव्ययपदानि विचित्य अधोलिखितानि वाक्यानि पूरयत

(क) ______ उक्त्वा बिलात् निष्क्रम्य तेन ______ सह प्रस्थितः।

(ख) सर्प आह "______ त्वं मे मित्रं जातम्।"

(ग) ______ तेन चिन्तितं ______ कथं मया दायादानां प्रत्यपकारः कर्त्तव्यः।

(घ) ______ चिन्तयन् बिले प्रविशन्तं कृष्णसर्पं दृष्ट्वा ______ अचिन्तयत्।

(ङ) एनं ______ कूपे नीत्वा दायादानाम् उच्छेदं करोमि।

(च) अहं गङ्गदत्तः तव ______ मैत्र्यर्थमागतः। सर्पः उवाच, "तृणानां वह्निना ______ संगमः।"

(छ) ______ तस्य मध्ये रम्यतरं कोटरमस्ति।

(ज) सर्पः अचिन्तयत् "अहं ______ परिणतवयाः ______ मूषकमेकं प्राप्नोमि।

सकाशे, तावत्, भूयः, अथ, एवम्, अपि, यत्, क्व, तत्र, सह, तथा, कदाचित्, साम्प्रतम्, एव, कथम्

सप्तमः पाठः

औषधम्

प्रस्तुत आयुर्वेदशास्त्रीय प्रसिद्ध ग्रंथ 'अष्टाङ्गहृदयम्' के रोगचिकित्सा के विभिन्न अध्यायों से उद्धृत है। आयुर्वेदशास्त्र के उद्भट विद्वान् वाग्भट्ट की यह अमरकृति है, जिसमें चरक एवं सुश्रुत का सार पूर्णरूप से संगृहीत है। मूलग्रंथ में एक-एक व्याधि के अनेक उपचार दिए गए हैं। यहाँ पर (इस पाठ में) ज्वर, स्वराभिघात, राजयक्ष्मा, हृदयरोग, मधुमेह, पथरी, पेटदर्द एवं पीलिया इन रोगों का एकविध उपचार ही दिया गया है। अन्त में सदाचार द्वारा सदैव नीरोग रहा जा सकता है, इस बात पर बल दिया गया है।

पाचयेत्कटुकां पिष्ट्वा कर्परेऽभिनवे शुचौ।
निष्पीडितो घृतयुतस्तद्रसो ज्वरदाहजित्।। 1।।

शर्कराक्षौद्रमिश्राणि शृतानि मधुरैः सह।
पिबेत्पयांसि यस्योच्चैर्वदतोऽभिहतः स्वरः।। 2।।

जीवन्तीं मधुकं द्राक्षां फलानि कुटजस्य च।
पुष्कराह्वं शटीं कृष्णां व्याघ्रीं गोक्षुरकं बलाम्।। 3।।

नीलोत्पलं तामलकीं त्रायमाणां दुरालभाम्।
कल्कीकृत्य घृतं पक्वं रोगराजहरं परम्।। 4।।

हृद्रोगे वातजे तैलं मस्तुसौवीरवक्रवत्।
पिबेत्सुखोष्णं सबिडं गुल्मानाहार्तिजिच्च तत्।। 5।।

मधुमेहित्वमापन्नो भिषग्भिः परिवर्जितः।
शिलाजतुतुलामद्यात्प्रमेहार्तः पुनर्नवः।।6।।

गन्धर्वहस्तबृहतीव्याघ्री गोक्षुरकेक्षुरात्।
मूलकल्कं पिबेद् दध्ना मधुरेणाश्मभेदनम्।।7।।

नीलिनीं निचुलं व्योषं क्षारौ लवणपञ्चकम्।
चित्रकं च पिबेत्पूर्णं सर्पिषोदरगुल्मनुत्।।8।।

पिबेन्निकुम्भकल्कं वा द्विगुणं शीतवारिणा।
कुम्भस्य चूर्णं सक्षौद्रं त्रैफलेन रसेन वा।।9।।

त्रिफलाया गुडूच्या वा दार्व्या निम्बस्य वा रसम्।
प्रातः प्रातर्मधुयुतं कामलार्ताय योजयेत।।10।।

नित्यं हिताहारविहारसेवी
समीक्ष्यकारी विषयेष्वसक्तः।
दाता समः सत्यपरः क्षमावा
नाप्तोपसेवी च भवत्यरोगः।।11।।

शब्दार्थाः टिप्पण्यश्च

पाचयेत्	–	पच् + णिच् + लोट् + प्र. पु. ए. व.। पकावे।
कटुकाम्	–	कटकी।
पिष्ट्वा	–	पिष् + क्त्वा। पीसकर।
कर्परे	–	खरल में, उलूखल में।
अभिनवे	–	अभिनव + सप्तमी ए. व., नए।
शुचौ	–	शुचि + सप्तमी ए. व., शुद्ध।
निष्पीडितः	–	निचोड़ा हुआ।
घृतयुतः	–	घी से युक्त।
तद्रसः	–	वह रस।

ज्वरदाहजित्	–	ज्वरदाहं जयति, ज्वरदाह + जिधातु + क्विप्। ज्वरदाह (ज्वरपीडा) अर्थात् बुखार को शान्त करने वाला है।
शर्कराक्षौद्रमिश्राणि	–	क्षुद्राभिः मधुमक्षिकाभिः निर्मितम् क्षौद्रम – मधु। शक्कर एवं शहद से मिले हुए।
शृतानि	–	पके हुए।
मधुरैः	–	मीठे।
उच्चैर्वदतः	–	उच्चस्वर से बोलते हुए, लड़खड़ाते हुए।
अभिहतः	–	अभि + हन् + क्त, टूटा हुआ, भङ्ग हुआ।
स्वरः	–	स्वर, वाणी।
जीवन्तीम्	–	गुडूची, जीवनी, शाकश्रेष्ठा मङ्गल्या आदि नामों से प्रसिद्ध लता।
मधुकम्	–	मधु, शहद।
द्राक्षाम्	–	अँगूर को।
कुटजस्य फलानि	–	कुटज के फल।
पुष्कराह्वम्	–	पुष्करमूलम्, एक औषधि का नाम, कुष्ठवृक्ष का मूल।
शटीम्	–	गन्धमूली, शटी नामक जड़ी बूटी कचूर।
कृष्णाम्	–	पिप्पली।
व्याघ्रीम्	–	कण्टकारी, एक औषधि।
गोक्षुरकम्	–	गोखुरः, गोक्षुरः, प्रसिद्ध औषधि।
बलाम्	–	भद्रा, भद्रबला नामक औषधि।
नीलोत्पलम्	–	नीलकमल।
तामलकीम्	–	भूम्यामलरी, तमालिनी औषधिविशेष का नाम।
त्रायमाणाम्	–	भयनाशिनी, भद्रनामिका औषधिविशेष का नाम।
दुरालमाम्	–	समुद्रान्ता, गान्धारी, औषधिविशेष का नाम।
कल्कीकृत्य	–	कल्क करके। लेई बनाकर।
पक्वम्	–	पका हुआ।

रोगराजहरम् – रोगाणां राजा रोगराजः राजयक्ष्मा (टी. बी.) आर्ति (पीडा को) जित्, हरने वाला तिल्ली, वृद्धि नामक रोग की पीड़ा को हरनेवाला।

हृद्रोगे – हृदयरोग में।

वातजे – वात (वायु) से उत्पन्न।

मस्तुसौबीरतक्रवत् – मस्तु – दधिजलम्, दही का पानी, सौबीरम् – यवैर्निर्मितः पेयविशेषः, काँजी।

सुखोष्णम् – कवोष्ण, हल्का गर्म।

सबिडम् – नमक सहित।

गुल्मानाहार्तिजित् – गुल्मस्यानाहः गुल्मानाहः गुल्मानाहस्य आर्तिं जयति इति गुल्मानाहार्तिजित् गुल्म (तिल्ली के) + आनाह (वृद्धि की) + आर्ति (पीडा को) जित् – हरनेवाला।

मधुमेहित्वम् आपन्नः – मधुमेह रोग को प्राप्त, मधुमेह रोग से ग्रस्त।

भिषग्भिः – वैद्यों के द्वारा।

परिवर्जितः – छोड़ दिया गया, (असाध्य समझकर) जिसकी चिकित्सा छोड़ दी गई हो।

शिलाजतुतुलाम् – शिलाजतु (नपुं.) – 'शिलाजीत' नाम से प्रसिद्ध औषधि। तुला तोला (एक परिमाण)।

अद्यात् – खावे, अद् धातु + विधिलिङ् + प्र. पु. ए. व.।

प्रमेहार्तः – प्रमेहरोग से पीड़ित।

पुनर्नवः – (नव यौवन सम्पन्न, पूर्णस्वस्थ) फिर से नया ।

गन्धर्वहस्तः – एरण्ड वृक्षः, रेंड़ या अरण्डी, नाम से प्रसिद्ध।

बृहती – वनवृन्ताकी (वनभटैया)।

इक्षुरः – इक्षुरकः कोकिलावृक्षः 'कुलिया खारा' (लोकभाषा में)।

मूलकल्कम् – मूल नामक औषधि की पीठी (लेई)।

मधुरेण दध्ना – मीठे दही के साथ।

अश्मभेदनम् – पाषाण पथरी को तोड़ने वाला।

नीलिनीम् – नीली, श्रीफली, मधुपर्णिका वृक्षविशेष का नाम।

निचुलम्	–	इज्वलवृक्षः, वेतसवृक्षः।
व्योषम्	–	शुण्ठी मरीच पिप्पलीनां समाहारः (सोठ, मरीच, पिप्पली) त्रिकटु।
क्षारौ	–	दो प्रकार के क्षार।
लवणपञ्चकम्	–	पाँच प्रकार के नमक 1. सौवर्चलम् 2. सैन्धवम्, 3. विटम् 4. औद्भिदम् 5. सामुद्रम्।
चित्रकम्	–	ओषधिविशेष का नाम।
चूर्णम्	–	चूर्ण (पाउडर)।
सर्पिषा	–	घी के द्वारा।
उदरगुल्मनुत्	–	'उदरगुल्म' नामक रोग को नष्ट करने वाला।
निकुम्भकल्कम्	–	निकुम्भः दन्तिरः वृक्षः, तस्य कल्कम् पिष्टिः।
द्विगुणम्	–	दो गुना।
शीतवारिणा	–	ठण्डे जल से।
कुम्भस्य	–	गुग्गुल का।
सक्षौद्रम्	–	क्षौद्र – मधु के साथ।
त्रैफलेन	–	त्रिफला (हरड़, बहेड़ा, आँवला) से निर्मित।
रसेन	–	रस से।
त्रिफलायाः	–	त्रिफला (आँवला, हरड़, बहेड़ा)।
गुडूच्या	–	गुडुची का।
दार्व्या	–	'दारूहरिद्रा' नामक औषधि।
निम्बस्य	–	नीम के।
रसम्	–	रस का।
मधुयुतम्	–	शहद मिला हुआ।
कामलार्ताय	–	कामला + आर्ताय कामला – पाण्डुरोग का भेद उससे पीड़ित को।
योजयेत्	–	युज् + णिच्, विधिलिङ्, प्र. पु., ए. व., मिलावे। पिलावे (यहाँ विशेष अर्थ है)।
हिताहारविहारसेवी	–	हितकर, आहार विहार का सेवन करने वाला।
समीक्ष्यकारी	–	सोचविचार कर कार्य करनेवाला।

विषयेषु	–	विषयों में।
असक्तः	–	आसक्तिरहित।
दाता	–	दानशील।
सत्यपरः	–	सत्यनिष्ठ, सत्यपालक।
क्षमावान्	–	क्षमाशील, सहिष्णु।
आप्तोपसेवी	–	आप्तपुरुष की सेवा करने वाला आप्त – यथार्थवक्ता सदाचारी।
अरोगः	–	नीरोग, रोगरहित।

अभ्यासः

1. **संस्कृतभाषया उत्तराणि लिखत**
   (क) ज्वरदाहरोगी कम् ओषधिं सेवेत?
   (ख) शर्कराक्षौद्रमिश्राणि शृतानि पयांसि कस्मिन् रोगे पिबेत्?
   (ग) जीवन्तीं मधुकं द्राक्षां कुटजस्य फलानि च को रोगी गृह्णीयात्?
   (घ) मधुमेहित्वमापन्नः कम् ओषधिम् अद्यात्?
   (ङ) कामलार्ताय रोगिणे किम् औषधं निर्दिष्टम्?
   (च) उदरगुल्म–रोगी किम् औषधं पिबेत्?
   (छ) कः सर्वदा अरोगः भवति?
2. **'क' स्तम्भस्य श्लोकपंक्तिभि : 'ख' स्तम्भस्य पङ्क्तीः मेलयत**

'क' स्तम्भः	*'ख' स्तम्भः*
(क) दाता समः सत्यपरः क्षमावान्	(क) उच्चैर्वदतोऽभिहतः स्वरः।
(ख) नीलोत्पलं तामलकीम्	(ख) प्रमेहार्तः पुनर्नवः।
(ग) मूलकल्कं पिबेद् दध्ना	(ग) त्रैफलेन रसेन वा।
(घ) कुम्भस्य चूर्णं सक्षौद्रम्	(घ) त्रायमाणां दुरालभाम्।
(ङ) शिलाजतुतुलामद्यात्	(ङ) आप्तोपसेवी च भवत्यरोगः।
(च) पिबेत् पयांसि यस्य	(च) मधुरेणाश्मभेदनम्।

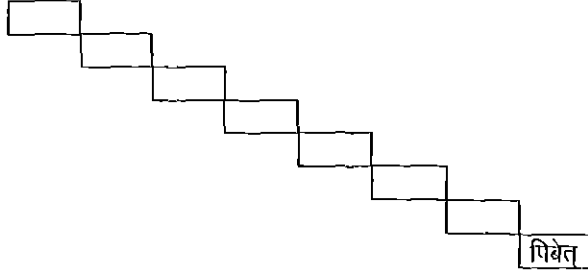
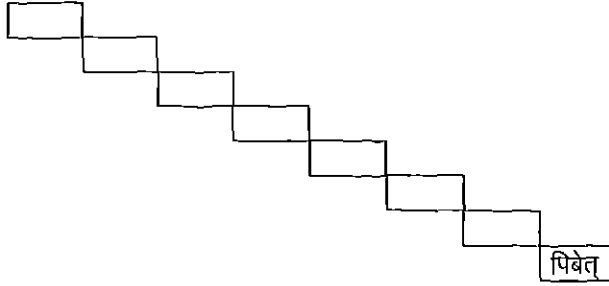
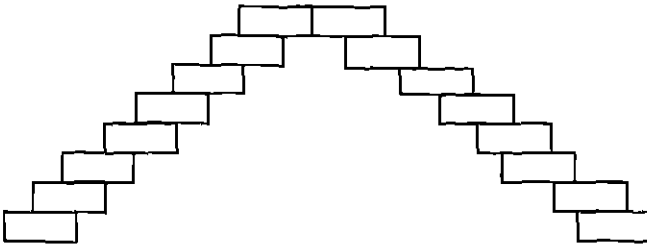
3. अधः पाठे प्रदत्तरोगाणां नामानि लिखितानि। मञ्जूषातः अर्थान् चित्वा रोगसमक्षं लिखत

रोगनामानि	*अर्थाः*
(क) कामलार्तः	------------
(ख) ज्वरदाहः	------------
(ग) उच्चैर्वदतोऽभिहतः स्वरः	------------
(घ) गुल्मानाहार्तिः	------------
(ङ) मधुमेहः	------------
(च) प्रमेहः	------------
(छ) रोगराजः	------------
(ज) अश्मरोगः	------------

मञ्जूषा

पत्थरी का रोग, शक्कर का रोग (Diabtcse), पीलिया, यक्ष्मा, उच्चज्वरताप, शर्करारोग, पेट में गोल हो जाना, तिल्ली–वृद्धि से होने वाली पीड़ा, जुबान में लड़खड़ाहट।

4. अधः रोगनामानि अधीत्य पाठे प्रदत्तम् ओषधिं कोष्ठकेषु पूरयत

(क) कामलार्तः

(ग) उदरगुल्मरोगी

एतदोषधीः कल्कीकृत्य पक्वेन घृतेन गृह्णीयात्।

5. अधोलिखितपदेषु रिक्तस्थानपूर्तिं विधाय सन्धिं/सन्धिच्छेदं कुरुत

(क)	पिबेत्	+	चूर्णम्	–	________
(ख)	प्रातः	+	________	–	प्रातर्मधुरयुतम्
(ग)	विषयेषु	+	असक्तः	–	________
(घ)	________	+	________	–	भवत्यरोगः
(ङ)	________	+	उच्चैः	–	यस्योच्चैः
(च)	नील	+	उत्पलम्	–	________
(छ)	पुनः	+	नवः	–	________

6. अधः रेखाङ्कितपदेषु का विभक्तिः कस्मिन् वचने च प्रयुक्ता इति निर्दिशत

(क) अभिनवे कर्परे कटुकां पिष्ट्वा पाचयेत्। (________)

(ख) मधुरैः सह पयांसि पिबेत्। (________)

(ग) मधुमेहित्वम् आपन्नः भिषग्भिः परिवर्जितः। (________)

(घ) मधुरेण दध्ना मूलकल्कं पिबेत् (________)

(ङ) कुम्भस्य चूर्णं शीतवारिणा पिबेत्। (________)

(च) निम्बस्य रसं प्रातः मधुयुतं कामलार्ताय योजयेत्। (________)

(छ) नित्यं हिताहारविहारसेवी ________ समीक्ष्यकारी। (________)

अष्टमः पाठः

लवकौतुकम्

प्रस्तुत पाठ करुणरस के अनुपम चितेरे महाकवि भवभूतिविरचित "उत्तररामचरितम्" नामक प्रसिद्ध नाटक के चतुर्थ अंक से संकलित किया गया है। राजा राम द्वारा निर्वासिता भगवती सीता के यमल पुत्रों लव एवं कुश का महर्षि वाल्मीकि के द्वारा पालन-पोषण किया गया, उन्हें शस्त्रों एवं शास्त्रों को शिक्षा दी गई तथा स्वरचित रामायण के सस्वर गान का अभ्यास कराया गया। महर्षि वाल्मीकि के आश्रम में अतिथि रूप में पधारे राजर्षि जनक, कौसल्या एवं अरुन्धती खेलते हुए बालकों के बीच एक बालक में राम एवं सीता की छाया देखते हैं। वे उन्हें बुलाकर गोद में बिठाकर वात्सल्य की वर्षा करती हैं। इतने में ही चन्द्रकेतु द्वारा रक्षित राजा राम का अश्वमेधीय अश्व आश्रम में प्रवेश करता है। नगरीय अश्व को देखकर आश्रम के बालकों में कौतूहल उत्पन्न होता है। वे उसे देखने के लिए लव को भी बुला लाते हैं। लव घोड़े को देखते ही जान जाते हैं कि यह अश्वमेधीय घोड़ा है। रक्षकों की घोषणा सुनकर बालक लव घोड़े को आश्रम में ले जाकर बाँधने का आदेश देते हैं। इसका अत्यंत मार्मिक चित्रण इस पाठ में हुआ है।

(नेपथ्ये कलकलः। सर्वे आकर्णयन्ति)

जनकः : अये, शिष्टानध्याय इत्यस्खलितं खेलतां वटूनां कोलाहलः।

कौसल्या : सुलभसौख्यमिदानी बालत्वं भवति। अहो, एतेषां मध्ये क एष रामभद्रस्य मुग्धललितैरङ्गैर्दारकोऽस्माकं लोचने शीतलयति?

अरुन्धती : कुवलयदलस्निग्धश्यामः शिखण्डकमण्डनो
वटुपरिषदं पुण्यश्रीकः श्रियैव सभाजयन्।
पुनरपि शिशुर्भूतो वत्सः स मे रघुनन्दनो
झटिति कुरुते दृष्टः कोऽयं दृशोरमृताञ्जनम्।।1।।

जनकः : (चिरं निर्वर्ण्य) भोः किमप्येतत्।
महिम्नामेतस्मिन् विनयशिशिरो मौग्ध्यमसृणो
विदग्धैर्निर्ग्राह्यो न पुनरविदग्धैरतिशयः।
मनो मे संमोहनस्थिरमपि हरत्येष बलवान्
अयोधातुं यद्वत्परिलघुरयस्कान्तशकलः।।

लवः : (प्रविश्य, स्वगतम्) अविज्ञातवयः क्रमौचित्यात् पूज्यानपि सतः कथमभिवादयिष्ये? (विचिन्त्य) अयं पुनरविरुद्धप्रकार इति वृद्धेभ्यः श्रूयते। (सविनयमुपसृत्य) एष वो लवस्य शिरसा प्रणामपर्यायः।

अरुन्धतीजनकौ: कल्याणिन्! आयुष्मान् भूयाः।

कौसल्या : जात! चिरं जीव।

अरुन्धती : एहि वत्स! (लवमुत्सङ्गे गृहीत्वा आत्मगतम् दिष्ट्या न केवलमुत्सङ्गश्चिरान्मनोरथोऽपि मे पूरितः)

कौसल्या : जात! इतोऽपि तावदेहि। (उत्सङ्गे गृहीत्वा) अहो, न केवलं मांसलोज्ज्वलेन देहबन्धनेन, कलहंसघोषघर्घरानुनादिना स्वरेण च रामभद्रमनुसरति। जात! पश्यामि ते मुखपुण्डरीकम्। (चिबुकमुन्नमय्य, निरूप्य, सवाष्पाकूतम्) राजर्षे! किं न पश्यसि? निपुणं निरूप्यमाणो वत्साया मे वध्वा मुखचन्द्रेणापि संवदत्येव।

जनकः : पश्यामि, सखि ! पश्यामि। (निरूप्य)
वत्सायाश्च रघूद्वहस्य च शिशावस्मिन्नभिव्यज्यते,
संवृत्तिः प्रतिबिम्बितेव निखिला सैवाकृतिः सा द्युतिः।
सा वाणी विनयः स एव सहजः पुण्यानुभावोऽप्यसौ
हा हा देवि किमुत्पथैर्मम मनः पारिप्लवं धावति।।

कौसल्या : जात ! अस्ति ते माता ? स्मरसि वातातम्?

लवः : नहि।

कौसल्या : ततः कस्य त्वम् ?

लवः : भगवतः सुगृहीतनामधेयस्य बाल्मीकेः।

कौसल्या : अयि जात ! कथयितव्यं कथय।

लवः : एतावदेव जानामि।
(प्रविश्य सम्भ्रान्ताः)

बटवः : कुमार ! कुमार ! अश्वोऽश्व इति कोऽपि भूत-विशेषो जनपदेष्वनुश्रूयते, सोऽयमधुनाऽस्माभिः स्वयं प्रत्यक्षीकृतः।

लवः : 'अश्वोऽश्व' इति नाम पशुसमाम्नाये सांग्रामिके च पठ्यते, तद् ब्रूत–कीदृश?

बटवः : अये, श्रूयताम्– 'पश्चात्पुच्छं वहति विपुलं तच्च धूनोत्यजस्रम्
दीर्घग्रीवः स भवति, खुरास्तस्य चत्वार एव।
शष्पाण्यत्ति, प्रकिरति शकृत् पिण्डकानाम्र-मात्रान्। किं व्याख्यानैर्व्रजति स पुनर्दूरमेह्येहि याम। (इत्यजिने हस्तयोश्चाकर्षति)

लवः : (सकौतुकोपरोधविनयम्।) आर्याः! पश्यत। एभिर्नीतोऽस्मि। (इति त्वरितं परिक्रामति।)

अरुन्धतीजनकौ : महत्कौतुकं वत्सस्य।

कौसल्या : अरण्यगर्भैरुपालापैर्यूयं तोषिता वयं च। भगवति! जानामि तं पश्यन्ती वञ्चितेव। तस्मादितोऽन्यतो भूत्वा प्रेक्षामहे तावत् पलायमानं दीर्घायुषम्।

अरुन्धती : अतिजवेन दूरमतिक्रान्तः स चपलः कथं दृश्यते (प्रविश्य)

बटवः : पश्यतु कुमारस्तावदाश्चर्यम्।

लवः : दृष्टमवगतं च। नूनमाश्वमेधिकोऽयमश्वः।

बटवः : कथं ज्ञायते ?

लवः : ननु मूर्खाः ! पठितमेव हि युष्माभिरपि तत्काण्डम्। किं न पश्यथ ? प्रत्येकं शतसंख्याः कवचिनो दण्डिनो निषङ्गिणश्च रक्षितारः। यदि च विप्रत्ययस्तत्पृच्छत।

बटवः : भो भोः! किंप्रयोजनोऽयमश्वः परिवृतः पर्यटति?

लवः : (सस्पृहमात्मगतम्) 'अश्वमेध' इति नाम विश्व-विजयिनां क्षत्रियाणामूर्जस्वलः सर्वक्षत्रपरिभावी महान् उत्कर्षनिकषः।

(नेपथ्ये)

योऽयमश्वः पताकेयमथवा वीरघोषणा।
सप्तलोकैकवीरस्य दशकण्ठकुलद्विषः।।

लवः : (सगर्वम्)। अहो! संदीपनान्यक्षराणि।

बटवः : किमुच्यते? प्राज्ञः खलु कुमारः।

लवः : भो भोः! तत्किमक्षत्रिया पृथिवी? यदेवमुद्-घोष्यते?

(नेपथ्ये)

रे, रे, महाराजं प्रति कः क्षत्रियः?

लवः : धिग् जाल्मान्।
यदि नो सन्ति सन्त्येव, केयमद्य विभीषिका।
किमुक्तैरेभिरधुना, तां पताकां हरामि वः।।
हे बटवः! परिवृत्य लोष्ठैरभिघ्नन्त उपनयतै-
नमश्वम्।
एष रोहितानां मध्येचरो भवतु।
(प्रविश्य सक्रोधः)

पुरुषः : धिक् चपल! किमुक्तवानसि ? तीक्ष्णतरा ह्यायुधश्रेणयः शिशोरपि दृप्तां वाचं न सहन्ते। राजपुत्रश्चन्द्रकेतुर्दुर्दान्तः, सोऽप्यपूर्वारण्यदर्शनाक्षिप्तहृदयो न यावदायाति, तावत् त्वरितमनेन तरुगहनेनापसर्पत।

बटवः : कुमार ! कृतं कृतमश्वेन। तर्जयन्ति विस्फारितशरासनाः कुमारभायुधीयश्रेणयः।
दूरे चाश्रमपदम्। इतस्तदेहि। हरिणप्लुतैः पलायामहे।

लवः : किं नाम विस्फुरन्ति शस्त्राणि?
(इति धनुरारोपयति)

शब्दार्थाः टिप्पण्यश्च

शिष्टानध्यायः — शिष्टेषु (आप्तेषु) अनध्यायः शिष्टागमनप्रयुक्तोऽनध्यायः। बड़े लोगों के आने पर अवकाश।

अस्खलितम् — अनियन्त्रितम्, बेरोकटोक।

सुलभसौख्यम् — सुलभं सौख्यमस्मिन्। इसमें (बचपन में) सुख सुलभ होता है।

मुग्धललितैः — मुग्धैः मनोहरैः ललितैः — सुकुमारैः।

कुवलयदलस्निग्ध- श्यामः	–	कुवलयम् – नीलकमलम्, तस्य दलम् – पत्रम्। तस्य इव स्निग्धः – मसृणः श्यामः – कृष्णवर्णः। नील कमल – दल के समान स्निग्ध (चिक्कन) तथा श्यामवर्ण।
शिखण्डकमण्डनः	–	काकपक्षशोभितः। काकपक्षों (घुँघराले बालों) से अलङ्कृत।
पुण्यश्रीकः	–	पुण्या - अलौकिकी श्रीः - शोभा यस्य। अलौकिक शोभासंपन्न।
दृशोरमृताञ्जनम्	–	दृशोः - नेत्रयोः, अमृताञ्जनम् – अमृतमयम् अञ्जनम्, आँखों में अमृतमय अञ्जन।
विनयशिशिरः	–	विनयेन – विनम्रतया, शिशिरः – शीतलः। विनय से शीतल (महिम्नामतिशयः का विशेषण)।
मौग्ध्यमसृणः	–	मौग्ध्येन– मधुरस्वभावतया, मसृणः – कोमलः सर्वभावुकजनस्पृहणीयः। मधुर स्वभाव के कारण कोमल, स्पृहणीय।
विदग्धैः	–	सूक्ष्ममतिभिः। विवेकियों के द्वारा।
संमोहस्थिरम्	–	संमोहेन – शोकाघातेन, स्थिरम् – जडीभूतमिव, सीता निर्वासन के कारण शोकाघात से संज्ञाशून्य सा-जड़।
अयस्कान्तशकलः	–	अयस्कान्तधातोः – चुम्बकस्य शकलः – अवयवः (लघुः), चुम्बक का छोटा-सा टुकड़ा।
अविज्ञातवयःक्रमौचित्यात्	–	अविज्ञातम् वयः क्रमौचित्यम् – अवस्था क्रम (आयु में छोटे बड़े का क्रम) का ज्ञान न होने से।
प्रणामपर्यायः	–	यथाक्रमं प्रणामपरंपरा। औचित्य क्रम के अनुसार प्रणाम।
उत्सङ्ग	–	यथाक्रोडः, गोद।
मांसलोज्ज्वलेन	–	मांसलेन – परिपुष्टेन बलवता उज्ज्वलेन – प्रकाशयुक्तेन, तेजस्विना। बलिष्ठ और तेजस्वी।

कलहंसघोषघर्घरानुनादिना– कलहंसस्य यो घोषः – शब्दः तस्य अनुनादिना – अनुकारिणा। मधुर कण्ठवाले हंस के स्वर का अनुकरण करने वाले (स्वर से)।

मुखपुण्डरीकम् – मुखमेव पुण्डरीकम् – श्वेतकमलम्, मुखरूपी कमल।

पुण्यानुभावः – पुण्यश्चासौ पवित्रः–प्रभावः, माहात्म्यम्, अनुभावः, पुण्य प्रभाव, "अनुभावः प्रभावे च सतां च मतिनिश्चये।"

अभिव्यज्यते – अभि + वि + अञ्ज् धातु + लट् (कर्मवाच्य), प्र. पु. ए. व., अभिव्यक्त होता है।

उत्पथैः – उन्मार्गैः। उन्मार्गों से।

पारिप्लवम् – चञ्चलम्।

पशुसमाम्नाये – पशुवर्गवर्णन परे शास्त्रे, पशुशास्त्र में।

सांग्रामिके – सङ्ग्रमिवर्णनपरे शास्त्रे, संग्रामशास्त्र में।

धूनोति – धूञ् + लट् + प्र. पु. ए. व. (स्वादिगण, श्नुविकरण), हिलाता रहता है।

अजस्रम् – निरन्तरम्, लगातार।

दीर्घग्रीवः – दीर्घा ग्रीवा यस्य सः, जिसकी गर्दन लंबी है।

प्रकिरति – प्र + कृक + लट् + प्र. पु. ए. व. (तुदादि, श विकरण), बिखेरता है। त्यागता है।

शकृत् – पुरीषम्। मल।

आम्रमात्रान् – आम्रफलतुल्यान्। आमफलों जैसा।

सकौतुकोपरोधविनयम् – कौतुकेन, उपरोधेन, विनयेन च सहितम्, कौतूहल, आग्रह और विनय के साथ।

अरण्यगर्भैरूपालापैः – अरण्यगर्भाणां – वननिवासिनां बालकानां रूपैः – शरीरसौष्ठवैः, आलापैः–वार्ताभिः। वनवासी बालकों के शरीर सौंदर्य और बात-चीत से।

पलायमानम् — परा + अय् + लट् – शानच् आदेश (धातु) "उपसर्गस्यायतो" परा के र को ल, दौड़ते हुए को।

दीर्घायुषम् — दीर्घम् आयुः यस्य सः दीर्घायुः, तम्। चिरायु को अश्वमेध यज्ञ संबंधी।

निषङ्गिणः — निषङ्गाः सन्ति येषाम् ते निषङ्गिणः। निषङ्ग+ इनि, पुँ. प्र. ब. व.। तरकसधारी।

विप्रत्ययः — संदेह, वि + प्रति + इण्धातु + अच् प्रत्यय।

ऊर्जस्वलः — ऊर्जोऽस्यारतीति ऊर्जस्वलः, ऊर्जस्+ वलच्। शक्तिशाली।

सर्वक्षत्रपरिभावी — समस्त (शत्रु) राजाओं को पराजित करने वाली।

उत्कर्षनिकषः — उत्कर्ष की कसौटी।

सप्तलोकैकवीरस्य — सप्तलोकेषु एकवीरस्य, सातों लोकों में एकमात्र वीर।

दशकण्ठकुलद्विषः — दशकण्ठस्य कुलं द्वेष्टि इति दशकण्ठकुल द्विट्–तस्य। रावण के कुल के द्वेषी।

सन्दीपनान्यक्षराणि — सन्दीपनाानि + अक्षराणि। ये अक्षर बड़े क्रोधोत्पादक हैं।

लोष्ठैः — ढेलों से।

अभिघ्नन्तः — अभि + हन् धातु + लट् (शतृ), पुं. प्र. ब. व., मारते हुए।

रोहितानाम् — मृगों के।

अपूर्वारण्य दर्शना क्षिप्तहृदयः — अपूर्वारण्यस्य दर्शनेन आक्षिप्तं हृदयं यस्य सः, बहुव्रीहि समास। अपूर्व वन की शोभा देखने में संलग्न मन वाले।

अपसर्पत — अप + सृप् + लोट् + म. पु. ब. व.। भाग जाओ।

विस्फारितशरासनाः — विस्फारितानि शरासनानि यैरते। बहुव्रीहि-समास। धनुषों को ताने हुए।

हरिणप्लुतैः	–	हरिणानां प्लुतैरिव प्लुतैः। हरिणों की भाँति कूदते हुए।
पलायामहे	–	भाग जाएँ। परा + अय् धातु + लट् + उ. पु. ब. व "उपसर्गस्यायतो" से परा के र को ल, भाग चलो।
विस्फुरन्ति	–	वि + स्फुर् + लट् + प्र. पु. ब. व., चमक रहे हैं।
आरोपयति	–	(धनुष) चढ़ाता है।

अभ्यासः

1. **संस्कृतभाषया उत्तराणि लिखत**

   (क) एष पाठः कस्मात् नाटकात् संकलितः?

   (ख) कः अस्य रचयिता?

   (ग) नेपथ्ये कोलाहलं श्रुत्वा जनकः किं कथयति?

   (घ) लवः कौशल्यां रामभद्रम् च कथमनुसरति?

   (ङ) बटवः अश्वं कथं वर्णयन्ति?

   (च) लवः कथं जानाति यत् अयम् आश्वमेधिकः अश्व?

   (छ) राजपुरुषस्य तीक्ष्णतरा आयुधश्रेणयः किं न सहन्ते?

2. **रेखाङ्कितपदानि आधृत्य प्रश्ननिर्माणं कुरुत**

   (क) अश्वमेध' इति नाम क्षत्रियाणाम् महान् उत्कर्षनिकषः।

   (ख) हे बटवः। लोष्ठैः अभिघ्नन्तः उपनयत एनम् अश्वम्।

   (ग) रामभद्रस्य एष दारकः अस्माकं लोचने शीतलयति।

   (घ) उत्पथैः मम मनः पारिप्लवं धावति।

   (ङ) अतिजवेन दूरमतिक्रान्तः स चपलः दृश्यते।

   (च) विस्फारितशरासनाः आयुधीयश्रेणयः कुमारं तर्जयन्ति।

   (छ) निपुणं निरूप्यमाणः लवः मुखचन्द्रेण सीतया संवदत्येव।

3. अधोलिखितानि कथनानि कः कं प्रति कथयति?

	कः	कं प्रति
(क) अस्ति ते माता? स्मरसि वा तातम्?	------	------
(ख) दिष्ट्या न केवलम् उत्सङ्गः मनोरथोऽपि मे पूरितः।	------	------
(ग) वत्सायाश्च रघूद्वहस्य च शिशावस्मिन्नभिव्यज्यते।	------	------
(घ) भगवतः सुगृहीतनामधेयस्य वाल्मीकेः।	------	------
(ङ) सोऽयमधुनाऽस्माभिः स्वयं प्रत्यक्षीकृतः।	------	------
(च) इतोऽन्यतो भूत्वा प्रेक्षामहे तावत् पलायमानं दीर्घायुषम्।	------	------
(छ) धिक् चपल ! किमुक्तवानसि?	------	------

4. सप्रसङ्गं व्याख्यां कुरुत

(क) सर्वक्षत्रपरिभावी महान् उत्कर्षनिकषः।

(ख) *किं व्याख्यानैर्व्रजति स पुनर्दूरमेह्येहि याम।*

(ग) सुलभसौख्यमिदानी बालत्वं भवति।

(घ) झटिति कुरुते दृष्टः कोऽयं दृशोरमृतांजनम् ?

5. अधोलिखितवाक्यानां रिक्तस्थानपूर्ति निर्देशानुसारं कुरुत

(क) क एष ______ रामभद्रस्य मुग्धललितैरङ्गैर्दारकोऽस्माकं लोचने ______ (क्रिया पदेन)

(ख) एष ______ में संमोहनस्थिरमपि मनः हरति। (कर्तृपदेन)

(ग) ______ ! इतोऽपि तावदेहि! (सम्बोधनेन)

(घ) 'अश्वोऽश्व' ______ नाम पशुसमान्नाये सांग्रामिके च पठ्यते। (सम्बोधनेन)

(ङ) अरुन्धतीजनकौ ______ वत्सस्य। (कर्मपदम्)

(च) दूरमतिक्रान्तः स चपलः कथं दृश्यते। (क्रियाविशेषणेन)

(छ) युष्माभिरपि तत्काण्डं ______ एव हि। (क्रियापदम्)

6. अधः समस्तपदानां विग्रहाः दत्ताः। उदाहरणमनुसृत्य समस्तपदानि रचयत, समासनामापि च लिखत ———

उदाहरणम्— पशूनां समाम्नायः, तस्मिन् पशुसमाम्नाये – षष्ठी तत्पुरुष

(क) विनयेन शिशिरः – ——— ———

(ख) अयस्कान्तस्य (धातोः) शकलः – ——— ———

(ग) दीर्घा ग्रीवा यस्य सः – ——— ———

(घ) मुखम् एव पुण्डरीकम् – ——— ———

(ङ) पुण्यः चारौ अनुभावः – ——— ———

(च) न स्खलितम् – ——— ———

(छ) सन्दीपनानि अक्षराणि – ——— ———

7. अधोलिखितपारिभाषिकशब्दानां समुचितार्थेन मेलनं कुरुत

(क) नेपथ्ये	(क) प्रकटरूप में
(ख) आत्मगतम्	(ख) देखकर
(ग) प्रकाशम्	(ग) पर्दे के पीछे
(घ) निरूप्य	(घ) अपने मन में
(ङ) उत्सङ्गे गृहीत्वा	(ङ) प्रवेश करके
(च) प्रविश्य	(च) आपने मन मे
(छ) सगर्वम्	(छ) गोद में बिठा कर
(ज) स्वगतम्	(ज) गर्व के साथ

8. (क) अव्ययपदैः अधोलिखितानि वाक्यानि पूरयत

(क) ——— अनेन तरुगहनेन अपसर्पत।

(ख) किमुच्यते ? प्राज्ञः ——— कुमारः।

(ग) पश्यतु कुमारः ——— आश्चर्यम्।

(घ) अयं पुनरविरुद्धप्रकारः ——— वृद्धेभ्यः श्रूयते।

(ङ) सा वाणी विनयः स एव सहजः पुण्यानुभावः ——— अरौ।

(ख) उपपदविभक्तिप्रयोगमनुसृत्य वाक्यद्वयं रचयत

(क) धिक् जाल्मान् (धिक्योगे द्वितीयाविभक्तिः प्रयुक्तः)

(क) __________ ।

(ख) __________ ।

(घ) कृतं कृतम् अश्वेन (कृतम्, अलम् (बस, रहने दो, अर्थ में) तृतीया विभक्ति का प्रयोग होता है।

(क) __________

(ख) __________

(ङ) अलम् विवादेन

(क) __________

(ख) __________

नवमः पाठः

पाणिनिकथा

प्रस्तुत पाठ सोमदेवभट्ट विरचित 'कथासरितसागर' के प्रथम लम्बक से उद्धृत है। इस पाठ में कहा गया है कि वर्तमान में अध्ययन-अध्यापन में प्रचलित पाणिनीय-व्याकरण के प्रवर्तक आचार्य पाणिनि के गुरु जी का नाम *वर्ष* था। पाणिनि आरंभ में मंदबुद्धि थे, किंतु हिमालय में जाकर तपस्या के द्वारा भगवान् शंकर को प्रसन्न कर इन्होंने नवीन-व्याकरण प्राप्त किया, जो *पाणिनीय-व्याकरण* के नाम से जाना जाता है। इस पाठ में यह भी कहा गया है कि पाणिनीय-व्याकरण के पूर्व ऐन्द्र व्याकरण प्रचलित था। किंतु महर्षि पाणिनि से शास्त्रार्थ में पराजित हो जाने से ऐन्द्र-व्याकरण पृथ्वी पर लुप्त ही हो गया।

अथ कालेन वर्षस्य शिष्यवर्गो महानभूत्।
तत्रैकः पाणिनिर्नाम जडबुद्धितरोऽभवत्।।1।।
न शुश्रूषापरिक्लिष्टः प्रेषितो वर्षभार्यया।
अगच्छत् तपसे खिन्नो विद्याकामो हिमालयम्।।2।।
तत्र तीव्रेण तपसा तोषितादिन्दुशेखरात्।
सर्वविद्यामुखं तेन प्राप्तं व्याकरणं नवम्।।3।।
ततश्चागत्य मामेव वादायाह्वयते स्म सः।
प्रवृत्ते चावयोर्वादे प्रयाताः सप्त वासराः।।4।।
अष्टमेऽह्नि मया तस्मिञ्जिते तत्समनन्तरम्।
नभःस्थेन महाघोरो हुङ्कारः शम्भुना कृतः।।5।।

तेन प्रणष्टमैन्द्रं तदस्मद् व्याकरणं भुवि।
जिताः पाणिनिना सर्वे मूर्खीभूता वयं पुनः।।6।।
अथ सञ्जातनिर्वेदः स्वगृहस्थितये धनम्।
हस्ते हिरण्यगुप्तस्य निधाय वणिजो निजम्।। 7।।
उक्त्वा तच्चोपकोशायै गतवानस्मि शङ्करम्।
तपोभिराराधयितुं निराहारो हिमालयम्।। 8।।

शब्दार्थाः टिप्पण्यश्च

अथ	– इसके बाद।
कालेन	– समय से।
वर्षस्य	– वर्ष नामक गुरु का।
शिष्यवर्गः	– शिष्यसमूह।
जडबुद्धितरः	– अधिक मंदबुद्धि।
शुश्रूषापरिक्लिष्टः	– शुश्रूषया परिक्लिष्टः, सेवा से थका हुआ।
तपसे	– तपस्या करने के लिए।
वर्षभार्यया	– वर्षस्य भार्या वर्षभार्या, तया वर्ष की पत्नी ने।
तपसा	– तपस्या से।
तोषिताद्	– संतुष्ट किए गए से।
इन्दुशेखरात्	– भगवान् शंकर से।
सर्वविद्यामुखम्	– सर्वासां विद्यानां मुखम् इति, सभी विद्याओं के मुखस्वरूप।
वादाय	– शास्त्रार्थ के लिए।
आह्वयते स्म	– चुनौती दी।
प्रवृत्ते	– आरंभ होने पर।
प्रयाताः	– बीत गए।
सप्त वासराः	– सात दिन।
अह्नि	– दिन में।

तत्समनन्तरम्	–	उसके तुरंत बाद।
नभः स्थेन	–	आकाश में स्थित (ने)।
हुङ्कार	–	'हुम्' इस प्रकार का शब्द।
ऐन्द्रम्	–	इन्द्रविरचित व्याकरण।
मूर्खीभूताः	–	अमूर्खाः मूर्खाः भूता इति, मूर्ख हो गए।
सञ्जातनिर्वेदः	–	सञ्जातः निर्वेदः यस्य सः, दुःखी।
स्वगृहस्थितये	–	स्वस्य गृहं स्वगृहम् स्वगृहस्य स्थितिः स्वगृह-स्थितिः तस्यै। अपने घर के निर्वाह के लिए।
उपकोशा	–	वररुचि की धर्मपत्नी, पाणिनि के गुरु वर्ष के छोटे भाई उपवर्ष की पुत्री।
वणिजः	–	व्यापारी के।
निधाय	–	रखकर।
आराधयितुम्	–	आराधना के लिए।
निराहारः	–	आहार (भोजन) न करने का व्रत करता हुआ।

अभ्यासः

1. **संस्कृतभाषया उत्तराणि लिखत**
   - (क) गुरोः वर्षस्य कः शिष्यः जडबुद्धितरः आसीत् ?
   - (ख) वर्षभार्यया प्रेषितः विद्याकामः पाणिनिः तपसे कुत्र अगच्छत् ?
   - (ग) पाणिनिना व्याकरणं कस्मात् प्राप्तम् ?
   - (घ) अष्टमेऽहनि इन्द्रे जिते शम्भुना किं कृतम् ?
   - (ङ) शिवस्य हुंकारेण भुवि किं प्रणष्टम् ?
   - (च) शङ्करम् आराधयितुं कः पुनः हिमालयम् अगच्छत् ?
2. **रेखाङ्कितपदानि आधृत्य प्रश्ननिर्माणं विरचयत**
   - (क) अथ कालेन <u>वर्षस्य</u> शिष्यवर्गो महानभूत्।
   - (ख) पाणिनिना सर्वविद्यामुखं <u>व्याकरणं</u> शिवात् प्राप्तम्।
   - (ग) महाघोरः हुङ्कार <u>शम्भुना</u> कृतः।
   - (घ) तेन <u>भुवि</u> ऐन्द्रं व्याकरणं प्रणष्टम्।

(ङ) तपोभिः शङ्करम् आराधयितुं पाणिनिः हिमालयं गतः।

(च) पाणिनिः स्वगृहस्थितये हिरण्यगुप्तस्य हस्ते धनम् न्यक्षिपत्।

3. **अधोलिखितेषु वाक्येषु रेखाङ्कितसर्वनामपदानि कस्मै प्रयुक्तानि**

(क) तेन प्रणष्टम् ऐन्द्रं व्याकरणं भुवि।

(ख) वयं सर्वे पुनः मूर्खीभूताः।

(ग) तत्र एकः जडबुद्धितरोऽभवत्।

(घ) तेन प्राप्तं व्याकरणं नवम्।

(ङ) सः वादाय माम् एव आह्वयते स्म।

(च) आवयोः वादस्य सप्तवासराः याताः।

(छ) अहं शङ्करम् आराधयितुं हिमालयं गतवान् अस्मि।

4. **विशेषणविशेष्यपदानां मेलनं कुरुत**

(क) सप्त	(क) हुङ्कारः
(ख) तोषितात्	(ख) शम्भुना
(ग) सर्वविद्यामुखम्	(ग) हिरण्यगुप्तस्य
(घ) महाघोरः	(घ) अहनि
(ङ) नभस्थेन	(ङ) वासराः
(च) अष्टमे	(च) पाणिनिः
(छ) वणिजः	(छ) इन्दुशेखरात्
(ज) स जातनिर्वेदः	(ज) व्याकरणम्

5. **अधोलिखितश्लोकानां रिक्तस्थानपूर्तिं कुरुत**

(क) न ________ प्रेषितो वर्षभार्यया।
अगच्छत् तपसे खिन्नो ________ हिमालयम्।।

(ख) तत्र तीव्रेण ________ तोषितादिन्दुशेखरात्।
________ तेन प्राप्तं व्याकरणम्।।

(ग) अथ ________ स्वगृहस्थितये धनम्।
हस्ते ________ निधाय वणिजो ________।।

(घ) ________ अहनि मया तस्मिन् तत्समनन्तरम्।

6. उदाहरणम् अनुसृत्य पदानां परिचयं दत्त

उदाहरणम् *= निर् + गम् + क्त = निर्गतः।*

(क) परिक्लिष्टः = ________ + ________ ।

(ख) प्रेषितः = ________ + ________ ।

(ग) खिन्नः = ________ + ________ ।

(घ) प्राप्तम् = ________ + ________ ।

(ङ) आगत्य = ________ + ________ ।

(च) प्रयातः = ________ + ________ ।

(छ) प्रणष्टम् = ________ + ________ ।

(ज) आराधयितुम् = ________ + ________ ।

7. मञ्जूषातः पदानि चित्वा पर्यायपदानि लिखत

पर्यायपदानि

(क) समयेन ________ ।

(ख) शङ्करात् ________ ।

(ग) सेवाखिन्नः ________ ।

(घ) गिरिराजम् ________ ।

(ङ) दिने ________ ।

(च) पृथिव्याम् ________ ।

(छ) तपस्याभिः ________ ।

(ज) आकाशस्थितेन ________ ।

मञ्जूषा

शुश्रूषापरिक्लिष्टः, नभःस्थेन, कालेन,
हिमालयम्, तपोभिः, इन्दुशेखरात,
भुवि, अहनि।

दशमः पाठः

लोकरक्षकः रामः

प्रस्तुत पाठ, अर्वाचीन संस्कृत वाङ्मय की लब्धप्रतिष्ठा कवयित्री बालाम्बिका-रचित *'सुबोधरामचरितम्'* काव्य के बालकाण्ड से लिया गया है। इसमें सर्वलोकाभिराम मर्यादापुरुषोत्तम राम, विनय-रूप-शील आदि गुणों से संपन्न भरत, लक्ष्मण और शत्रुघ्न के जन्म, जातकर्मादिक पावन संस्कार-वर्णन के साथ-साथ यज्ञरक्षा, गाधिपुत्र विश्वामित्र से प्राप्त किए गए बला-अतिबला विद्याओं, दिव्य अस्त्रों, वनमार्ग में अवरोध उत्पन्न करने वाली ताड़का का वध तथा अपने अनुज सुमित्रापुत्र लक्ष्मण के साथ कुशिकनन्दन (विश्वामित्र) के आश्रम में पहुँचना आदि का सचित्र चित्रण है। इन श्लोकों में अनुष्टुप् छंद का प्रयोग है।

राजा दशरथः कृत्वा हयमेधं महाक्रतुम्।
ऋष्यशृङ्गं पुरोधाय पुत्रीयेष्टिमथाकरोत्।।1।।

यागाग्निमध्याद्देवांशः कश्चिदुत्थाय पूरुषः।
पायसं स्वर्णपात्रस्थं ददौ तस्मै महीभुजे।। 2।।

तस्मात्स्वीकृत्य सोऽप्येतन्निजपत्नीरपाययत्।
पीत्वा तद्राजपत्न्यस्ता अन्तर्वत्न्योऽभवन्द्रुतम्।। 3।।

संपूर्णे द्वादशे मासि कौसल्या सुशुभे दिने।
सर्वलोकावनोत्कण्ठं सुतं राममजीजनत्।। 4।।

तथैव पुत्रं कैकेयी भरतं भ्रातृवत्सलम्।
पुष्ये पुरुषशार्दूलमसूत गुणवत्तरम्।।5।।

अथ लक्ष्मणशत्रुघ्नौ विनयाधिकशालिनौ।। 6।।
श्रुत्वा पंक्तिरथः पुत्रजननं मुदितस्ततः।
जातकर्मादिकं तेषां पुत्राणां कृतवांस्तदा।। 7।।
प्रवर्धमानेष्वेतेषु पूर्णिमाचन्द्रकान्तिषु।
सर्वलोकाभिरामेषु मुमुदे सोऽधिकं नृपः।।8।।
तस्मिन्नवसरे गाधिसूनुरागत्य भूभिपम्।
यज्ञरक्षणदक्षं मे रामं देहीत्ययाचत।। 9।।
प्रथमं दूयमानोऽपि वसिष्ठस्याज्ञया ततः।
कौशिकस्य करे राजा ददौ रामं सलक्ष्मणम्।।10।।
सलक्ष्मणाय रामाय मुनिर्विनयशालिने।
विद्यां बलामतिबलामस्त्राण्यप्युपदिष्टवान्।।11।
अथ मार्गं निरुन्धानां राक्षसीं ताटकाभिधाम्।
अवधीद्राघवस्तूर्णं प्रेरितः कौशिकेन सः।। 12।।
रघूद्वहं ससौमित्रिं मार्गे कुशिकनन्दनः।
कथाभिर्नन्दयन्प्रापदाश्रमं स्वं गतश्रमः।। 13।।

शब्दार्थाः टिप्पण्यश्च

हयमेधम् – अश्वमेध को।
महाक्रतुम् – (महान् चासौ क्रतुश्च, महाक्रतुः, तम् कर्मधारय)। महायज्ञ।
ऋष्यशृङ्गम् – (महाराज दशरथ की पुत्री शान्ता के पति थे)। शृङ्गी ऋषि।
पुत्रीयेष्टिम् – पुत्रीयेष्टि यज्ञ (प्राचीन काल में पुत्र-प्राप्ति के लिए किया जाने वाला यज्ञ)।
पायसम् – खीर।
स्वर्णपात्रस्थम् – स्वर्ण-निर्मित बर्तन में रखे हुए।

अपाययत् – पिलाया।
पीत्वा – (पा पिब्) + क्त्वा, पी करके।
राजपत्न्यः – (कौशल्या, कैकेयी, सुमित्रा) राज्ञः पत्न्यः षष्ठी तत्पु., राजा की पत्नियाँ।
अन्तर्वत्न्यः – अन्तः अस्ति (गर्भः) यासां ताः, बहुव्रीहि समास "अन्तर्वत्पतिवत्योर्नुक्" इति नुगागमः। गर्भवती।
अभवन् – (भू + लङ् + प्र.पु.ब.व.), हुई।
सर्वलोकावनोत्कण्ठम् – समस्त त्रिलोक की रक्षा के लिए उत्कण्ठित।
पुरुषशार्दूलम् – पुरुषों में श्रेष्ठ।
अजीजनत् – (जन् + णिच् + लुङ् + प्र.पु.ए.व.) पैदा की, जन्म दिया।
पुष्ये – पुष्य नक्षत्र में।
लक्ष्मणशत्रुघ्नौ – (लक्ष्मणश्च शत्रुघ्नश्च, द्वन्द्व समास) लक्ष्मण और शत्रुघ्न।
विनयाधिकशालिनौ – सौंदर्य, शील और गुणों में श्रेष्ठ।
अजनयत् – (जन् + णिच् + लङ् + प्र.पु.ए.व.) उत्पन्न किया।
श्रुत्वा – (श्रु + क्त्वा) सुनकर के।
पङ्क्तिरथः – दशरथ।
पुत्रजननम् – पुत्र जन्म को।
मुदितः – प्रसन्न होकर।
कृतवान् – (डुकृञ् + क्तवतु + प्र.ए.व.) किया।
पूर्णिमाचन्द्रकान्तिषु – पूर्णिमा के चंद्रमा के समान कांति वाले।
सर्वलोकाभिरामेषु – समस्त लोकों में सुंदर।
मुमुदे – (मुद् + लिट् + प्र. पु. ए. व.) प्रसन्न हुए।
नृपः – नृन् पाति रक्षति इति नृपः। राजा (दशरथ)।
गाधिसूनुः – गाधेः सूनुः पुत्रः, षष्ठी तत्पु। गाधि के पुत्र (विश्वामित्र)।
आगत्य – (आङ् + गम् + क्त्वा ल्यप्) आ करके।
यज्ञरक्षणदक्षम् – (यज्ञस्य रक्षणे दक्षः तम्, षष्ठी, सप्तमी तत्पुरुष, यज्ञ की रक्षा में प्रवीण।
देहि – (दा + लोट् + म. पु. ए. व.) दो।
अयाचत – (याच् + लङ् + प्र. पु. ए. व.) माँगा।
दूयमानः – (दू + कर्मवाच्य (य) शानच् + प्र.ए.व.) खिन्न होते हुए।

सलक्ष्मणम्	–	लक्ष्मणेन सहितः, लक्ष्मण के साथ।
उपदिष्टवान्	–	(उप + दिश् + क्तवत् + प्र.ए.व.), उपदेश दिया।
निरुन्धानाम्	–	अवरोध उत्पन्न करने वाली।
अवधीत्	–	(हन् वध + लङ्. + प्र.पु.ए.व.), वध कर दिया।
राघवः	–	(रघु + अण् + प्र.ए.व.), राम।
कौशिकेन	–	(कुशिकस्य पुत्रः पुमान् कौशिकः तेन), कुशिक के पुत्र विश्वामित्र के द्वारा।
रघूद्वहम्	–	रघुवंश को वहन करने वाले, राम।
ससौमित्रिम्	–	(सुमित्रायाः पुत्रः पुमान् सौमित्रः (सुमित्रा + इञ्) सौमित्रिणा सह, ससौमित्रीः तम्), सुमित्रा के पुत्र लक्ष्मण के साथ।
कुशिकनन्दनः	–	कुशिकस्य नन्दनः षष्ठी तत्पुरुष।
नन्दयन्	–	(नन्द् + शतृ + प्र. ए. व.), आनन्दित करते हुए।
प्रापत्	–	प्र. आप् + लुङ्. + प्र.पु.ए.व., पहुँचे।
गतश्रमः	–	गतः श्रमः यस्य सः, बहुव्रीहि समास, थकान रहित।

अभ्यासः

1. **संस्कृतभाषया उत्तराणि लिखत**
   - (क) राजा दशरथः कं पुरोधाय पुत्रीयेष्टिम् अकरोत् ?
   - (ख) कस्मात् उत्थाय देवांशः राज्ञे पायसं ददौ ?
   - (ग) राजा स्वपत्नीः किम् अपाययत् ?
   - (घ) रामं का अजीजनत् ?
   - (ङ) पुत्रजननं श्रुत्वा मुदितः राजा पुत्राणां किं कृतवान् ?
   - (च) गाधिसूनुः भूपतिं कीदृशं रामम् अयाचत ?
   - (छ) राघवः किं कुर्वन्तीं ताटकां राक्षसीम् अवधीत् ?
2. **रेखाङ्कितपदानि आधृत्य प्रश्ननिर्माणं कुरुत**
   - (क) कौशिकः रामलक्ष्मणौ <u>कथाभिः</u> नन्दयन् स्वाश्रमं प्राप्नोत्।
   - (ख) प्रथमं <u>वसिष्ठस्य</u> आज्ञया दूयमानोऽपि राजा विश्वामित्राय पुत्रौ ददौ।
   - (ग) सुमित्रा लक्ष्मणशत्रुघ्नौ अजनयत्।

(घ) राजा दशरथः पुत्रीयेष्टिम् अकरोत्।
(ङ) यज्ञमध्यात् उत्थाय कश्चित् पुरुषः महीभुजे पायसं ददौ।
(च) सर्वलोकाभिरामेषु स नृपः अधिकं मुमुदे।

3. **अधोलिखितवाक्यानि समुचितैः अव्ययपदैः पूरयत**

(क) श्रुत्वा पङ्क्तिरथः पुत्रजननं मुदितः ________।
(ख) तस्मात् स्वीकृत्य सः ________ एतत् निजपत्नीरपाययत्।
(ग) ऋष्यशृङ्गं पुरोधाय पुत्रीयेष्टिम् ________ अकरोत्।
(घ) जातकर्मादिकं तेषां पुत्राणां कृतवान् ________।
(ङ) अवधीत् राघवः ________ प्रेरितः कौशिकेन सः।
(च) ताः पीत्वा राजपत्न्यः ________ अन्तर्वत्न्यः अभवन्।

4. **पाठात् विचित्य (अधोदत्तपदानां) पर्यायवाचिपदानि लिखत**

(क) अश्वमेधम् ________।
(ख) यज्ञम् ________।
(ग) राज्ञे ________।
(घ) शीघ्रम् ________।
(ङ) तनयम् ________।
(च) नरसिंहम् ________।
(छ) दशरथः ________।
(ज) विश्वामित्रः ________।
(झ) लक्ष्मणः ________।

5. **विशेषणपदानां विशेष्यैः सह मेलनं कुरुत**

(क) हयमेधम्	(क) रामम्
(ख) स्वर्णपात्रस्थम्	(ख) राक्षसीम्
(ग) शुभे	(ग) दशरथः
(घ) भ्रातृवत्सलम्	(घ) लक्ष्मणशत्रुघ्नौ
(ङ) रूपशीलगुणोत्कर्षौ	(ङ) पायसम्
(च) मुदितः	(च) भरतम्
(छ) यज्ञरक्षणदक्षम्	(छ) महाक्रतुम्
(ज) ताटकाभिधां	(ज) दिने

6. उदाहरणमनुसृत्य पदानि रचयत

उदाहरणम् – उत् + स्था + ल्यप् = उत्थाय

(क) श्रु + क्त्वा =

(ख) कृ + क्तवत् =

(ग) मुद् + क्त =

(घ) प्र + वृध् + शानच् =

(ङ) आ + गम् + ल्यप् =

(च) दु + कर्मवाच्य + शानच् =

(छ) प्र + ईर् + क्त =

(ज) उप + दिश् + क्तवत् =

7. अधोलिखितसमस्तपदानां विग्रहं कुरुत

	समस्तपदानि	*विग्रहाः*	*समासनामानि*
(क)	गाधिसूनुः	______	षष्ठीतत्पुरुषः
(ख)	लक्ष्मणशत्रुघ्नौ	______	इतरेतरद्वन्द्वः
(ग)	गतश्रमः	______	बहुव्रीहिः
(घ)	पुरुषशार्दूलम्	______	कर्मधारयः
(ङ)	महाक्रतुम्	______	कर्मधारयः
(च)	यज्ञरक्षणदक्षम्	______	षष्ठी, सप्तमी तत्पुरुषः
(छ)	नृपः	______	उपपदतत्पुरुषः
(ज)	दशरथः	______	बहुव्रीहिः

8. सप्रसङ्गं व्याख्यां कुरुत

(क) ऋष्यशृङ्गं पुरोधाय पुत्रीयेष्टिमकरोत्।

(ख) कौशिकस्य करे राजा ददौ रामं सलक्ष्मणम्।

(ग) अथ मार्गं निरुन्धानां राक्षसीं ताटकाभिधाम्।

(घ) पायसं स्वर्णपात्रस्थं ददौ तस्मै महीभुजे।

(ङ) श्रुत्वा पङ्क्तिरथः पुत्रजननं मुदितस्ततः।

छन्द-परिचय

छन्द

श्लोक लिखते समय वर्णों की एक निश्चित व्यवस्था रखनी पड़ती है। यह व्यवस्था छंद या वृत्त कहलाती है।

वृत्त के भेद

प्रायः प्रत्येक श्लोक के चार भाग होते हैं, जो पाद या चरण कहलाते हैं। जिस वृत्त के चारों चरणों में बराबर अक्षर हो, वे समवृत्त कहलाते हैं। जिसके प्रथम और तृतीय तथा द्वितीय और चतुर्थ चरण अक्षरों की दृष्टि से समान हों, वे **अर्धसमवृत्त हैं**। जिसके चारों चरणों में अक्षरों की संख्या समान न हो, वे **विषमवृत्त** कहे जाते हैं।

गुरु-लघु व्यवस्था

छंद की व्यवस्था वर्णों पर आधारित रहती है मुख्यतः स्वर वर्ण पर। ये वर्ण छंद की दृष्टि से दो प्रकार के होते हैं– **लघु एवं गुरु**। सामान्यतः ह्रस्व स्वर लघु होता है और दीर्घ स्वर गुरु। किंतु कुछ परिस्थितियों में ह्रस्व स्वर लघु न होकर गुरु माना जाता है। छंद में गुरु-लघु व्यवस्था का नियम इस प्रकार है–अनुस्वारयुक्त, दीर्घ, विसर्गयुक्त, तथा संयुक्त वर्ण के पूर्व का वर्ण गुरु होते हैं। शेष सभी वर्ण लघु होते हैं। छंद के किसी पाद का अंतिम वर्ण लघु होने पर भी आवश्यकतानुसार गुरु मान लिया जाता है–

> **सानुस्वारश्च दीर्घश्च विसर्गी च गुरुर्भवेत्।**
> **वर्णः संयोगपूर्वश्च तथा पादान्तगोऽपि वा।। –छन्दोमञ्जरी 1.11**

गुरु एवं लघु के लिए अधोलिखित चिह्न प्रयुक्त होते हैं–

गुरु - ऽ अथवा ˘

लघु - । अथवा -

गण-व्यवस्था

तीन वर्णों का एक गण माना जाता है। गुरु-लघु के क्रम से गण आठ प्रकार के होते हैं–

भ - गण SII	य - गण ISS	म - गण SSS
ज - गण ISI	र - गण SIS	न - गण III
स - गण IIS	त - गण SSI	

भगण आदि गुरु, जगण मध्य गुरु तथा सगण अंत गुरु होते हैं।
यगण आदि लघु, रगण मध्य लघु और तगण अंत लघु होते हैं।।
मगण में गुरु और नगण में सभी वर्ण लघु होते हैं।

आदिमध्यावसानेषु भजसा यान्ति गौरवम्।
यरता लाघवं यान्ति मनौ तु गुरुलाघवम्।। **–छन्दोमञ्जरी**

(क) वैदिक छन्द

वैदिक मन्त्रों में गेयता का समावेश करने के लिए जिन छंदों का प्रयोग हुआ है, उनमें गायत्री, अनुष्टुप् और त्रिष्टुप् प्रमुख हैं।

1. गायत्री (आठ अक्षरों के तीन पादों वाला समवृत्त)

जिस छंद में तीन चरण हों और प्रत्येक चरण में आठ अक्षर हों तथा जिनमें पाँचवाँ लघु और छठा अक्षर गुरु हो, वह **गायत्री** छंद कहलाता है। अधोलिखित मन्त्र में गायत्री छंद है–

पावका नः सरस्वती,
वाजेभिर्वाजिनीवती।
यज्ञं वष्टु धिया वसुः।।

2. अनुष्टुप् (आठ अक्षरों वाला समवृत्त)

जिस छंद में चार चरण हों और प्रत्येक चरण में आठ अक्षर हों, जिनमें पाँचवाँ अक्षर लघु तथा छठा अक्षर गुरु हो, सातवाँ अक्षर जिसके पहले और तीसरे चरण में गुरु हो, किन्तु दूसरे और चौथे चरण में लघु हो, वह **अनुष्टुप्** छंद कहलाता है।

उदाहरण— त्र्यम्बकं यजामहे
सुगन्धिम्पुष्टिवर्धनम्।
उर्वारुकमिव बन्धनान्'
मृत्योर्मुक्षीय माऽमृतात्।।

छंद की पूर्ति के लिए 'त्र्यम्बकं' को "त्रियम्बकं" पढ़ते हैं।

3. त्रिष्टुप् (ग्यारह अक्षरों वाला समवृत्त)

जिस छंद में चार चरण हों और प्रत्येक चरण में ग्यारह अक्षर हों, वह **त्रिष्टुप्** छंद कहलाता है।
इस पुस्तक के प्रथम पाठ का निम्नलिखित मन्त्र त्रिष्टुप् छन्द में है-

द्वा सुपर्णा सयुजा सखाया,
समानं वृक्षं परिषस्वजाते।
तयोरन्यः पिप्पलं स्वाद्वत्ति,
अनश्नन्नन्यो अभिचाकशीति।।
(श्वेत., उ. 2.4.6 तथा मुण्डक 3.1.1)

यथा नद्यः स्यन्दमानाः समुद्रे-
ऽस्तं गच्छन्ति नामरूपे विहाय।
तथा विद्वान् नामरूपाद् विमुक्तः
परात्परं पुरुषमुपैति दिव्यम्।।
(मुण्डक. 3.2.8)

(ख) लौकिक छन्द

प्रस्तुत पुस्तक के अनेक पाठों में अनेक लौकिक छंदों का संकलन है। अतः संकलित छंदों के लक्षण एवं उदाहरण प्रस्तुत है :

1. अनुष्टुप् (आठ अक्षरों वाला समवृत्त)

**लक्षण- श्लोके षष्ठं गुरु ज्ञेयं सर्वत्र लघु पञ्चमम्।
द्विचतुष्पादयोर्ह्रस्वं सप्तमं दीर्घमन्ययोः।।**
(श्रुतबोध. 10)

अनुष्टुप् छंद के चारों चरणों का पाँचवाँ वर्ण लघु, छठा वर्ण गुरु तथा

प्रथम एवं तृतीय चरण का सातवाँ वर्ण गुरु और द्वितीय एवं चतुर्थ चरण का सातवाँ वर्ण लघु होता है।
इस पुस्तक का द्वितीयपाठ अनुष्टुप् छंद में है-

(i) यद्यदाचरति श्रेष्ठस्तत्तदेवेतरो जनः।
स यत्प्रमाणं कुरुते लोकस्तदनुवर्तते।।

(ii) ययातेरिव शर्मिष्ठा भर्तुर्बहुमता भव।
सुतं त्वमपि सम्राजं सेव पूरुमवाप्नुहि।।

2. इन्द्रवज्रा (त त ज ग ग) (ग्यारह वर्णों वाला समवृत्त)

लक्षण– स्यादिन्द्रवज्रा यदि तौ जगौ गः।

–वृत्तरत्नाकर, 3/30

जिस छंद के प्रत्येक पाद में दो तगण, एक जगण और दो गुरु वर्ण क्रम से हों, वह इन्द्रवज्रा छंद होता है।

त	त	ज	ग	ग
ऽ ऽ ।	ऽ ऽ ।	। ऽ ।	ऽ	ऽ

स्वर्गच्युतानामिह जीवलोके
चत्वारि चिह्नानि वसन्ति देहे।
दानप्रसङ्गो मधुरा च वाणी
देवार्चनं पण्डिततर्पणञ्च।।

3. उपेन्द्रवज्रा (ज त ज ग ग) (ग्यारहवर्णों का समवृत्त)

लक्षण– उपेन्द्रवज्रा जतजास्ततो गौ।

–वृत्तरत्नाकर, 3/31

जिस छंद के प्रत्येक पाद में क्रमशः एक जगण, एक तगण, एक जगण और दो गुरु वर्ण हों, वह उपेन्द्रवज्रा छंद होता है।

ज	त	ज	ग	ग
।ऽ।	ऽऽ।	।ऽ।	ऽ	ऽ

उदाहरण– त्वमेव माता च पिता त्वमेव
त्वमेव बन्धुश्च सखा त्वमेव।
त्वमेव विद्या द्रविणं त्वमेव
त्वमेव सर्वं मम देवदेव।।

4. उपजाति (ग्यारहवर्णों का समवृत्त)

लक्षण– अनन्तरोदीरितलक्ष्मभाजौ पादौ यदीयावुपजातयस्ताः।
इत्थं किलान्यास्वपि मिश्रितासु वदन्ति जातिष्विदमेव नाम।।
–वृत्तरत्नाकर, 3/32

इसके प्रथम एवं तृतीय चरण उपेन्द्रवज्रा तथा द्वितीय एवं चतुर्थ चरण इन्द्रवज्रा छंद के अनुसार है, जिससे यह उपजाति छंद है।

उदाहरण–	अस्त्युत्तरस्यां दिशि देवतात्मा	इन्द्रवज्रा
	हिमालयो नाम नगाधिराजः।	उपेन्द्रवज्रा
	पूर्वापरौ तोयनिधी वगाह्य	इन्द्रवज्रा
	स्थितः पृथिव्या इव मानदण्डः।।	उपेन्द्रवज्रा

इसके प्रथम तथा तृतीय पाद इन्द्रवज्रा छन्द में हैं। द्वितीय तथा चतुर्थ पाद उपेन्द्रवज्रा छन्द में हैं।

5. वसन्ततिलका (त भ ज ज ग ग) (चौदह वर्णों वाला समवृत्त)
लक्षण– उक्ता वसन्ततिलका तभजाजगौ गः।
–वृत्तरत्नाकर, 3/78

जिसके प्रत्येक चरण में क्रमशः तगण, भगण, जगण जगण एवं दो गुरु वर्ण हों वह वसन्ततिलका छंद कहलाता है।
इस पुस्तक के पञ्चम पाठ का अधोलिखित श्लोक वसन्ततिलका छंद में है–

त	भ	ज	ज	ग	ग
SSI	SII	ISI	ISI	S	S

जाड्यं धियो हरति सिञ्चति वाचि सत्यं
मानोन्नतिं दिशति पापमपाकरोति।
चेतः प्रसादयति दिक्षु तनोति कीर्तिं
सत्सङ्गतिः कथय किं न करोति पुंसाम्।।

6. वंशस्थ (ज त ज र) (बारह वर्णों का समवृत्त)

लक्षण– जतौ तु वंशस्थमुदीरितं जरौ।

–वृत्तरत्नाकर, 3/47

जिस छंद के प्रत्येक चरण में क्रमशः जगण, तगण, जगण एवं रगण हों, वह **वंशस्थ** छंद कहलाता है।

उदाहरण– ज त ज र
| S | S S | | S | S | S

न केवलं प्राणिवधो वधो मम
त्वदीक्षणाद् विश्वसितान्तरात्मनः
विगर्हितं धर्मधनैर्निबर्हणं
विशिष्य विश्वासजुषां द्विषामपि।।

7. शार्दूलविक्रीडित (म स ज स त त ग) (उन्नीस वर्णों वाला समवृत्त)

लक्षण– सूर्याश्वैर्यदि मः सजौ सततगाः शार्दूलविक्रीडितम्।
–छन्दोमंजरी, 2/19

जिस छंद के प्रत्येक पाद में क्रमशः मगण, सगण, जगण, सगण, दो तगण एवं एक गुरु वर्ण हों, वह **शार्दूलविक्रीडित** छन्द कहलाता है। इसमें बारहवें वर्ण के बाद पहली यति और उन्नीसवें अक्षर के बाद दूसरी यति होती है।

इस पुस्तक के तृतीय पाठ का अधोलिखित श्लोक शार्दूलविक्रीडित छंद में है–

म स ज स त त ग
SSS | |S |S| | |S SS| SS| S

यास्यत्यद्य शकुन्तलेति हृदयं संस्पृष्टमुत्कण्ठया,
कण्ठः स्तम्भितवाष्पवृत्तिकलुषश्चिन्ताजडं दर्शनम्।
वैक्लव्यं मम तावदीदृशमिदं स्नेहादरण्यौकसः,
पीड्यन्ते गृहिणः कथं न तनयाविश्लेषदुःखैर्नवैः।।

8. मालिनी (न, न, म, य, य) (पन्द्रह अक्षरों वाला समवृत्त)

जिसके प्रत्येक चरण में क्रमशः दो नगण, एक मगण तथा दो यगण, हों, वह छंद **मालिनी** कहलाता है। इसमें पहली यति (विराम) आठवें वर्ण के बाद और दूसरी यति पन्द्रहवें वर्ण के बाद होती है।

संस्कृत में **लक्षण एवं उदाहरण**–

न	न	म	य	य
।।।	।।।	ऽ ऽ ऽ	। ऽ ऽ	। ऽ ऽ
ननम	यययु	तेयंमा	लिनीभो	गिलोकैः।

—**वृत्तरत्नाकरः 3/84**

न	न	म	य	य
सरसि/	जमनु/	विद्धं शै/	वलेना/	पि रम्यं
मलिन/	मपि हि/	मां शोर्ल/	क्ष्म लक्ष्मीं/	तनोति।
इयम/	धिकम/	नोज्ञा व/	ल्कलेना/	पि तन्वी
किमिव/	हि मधु/	राणां म/	ण्डनं ना/	कृतीनाम्।

—**अभिज्ञानशाकुन्तलम् 1/20**

9. शिखरिणी (य म न स भ ल ग) (सत्रह अक्षरों वाला समवृत्त)

जिनके प्रत्येक चरण में क्रमशः यगण, मगण, नगण, सगण, भगण तथा एक लघु और एक गुरु वर्ण हों, वह **शिखरिणी** छंद कहलाता है। छठे और सत्रहवें वर्ण के बाद इसमें यति होती है।

संस्कृत में **लक्षण एवं उदाहरण**–

य	म	न	स	भ	ल	ग
। ऽ ऽ	ऽ ऽ ऽ	।। ।	।।ऽ	ऽ।।	।	ऽ
रसैरु	द्रैश्छिन्ना	यमन	सभला	गःशिख	रि	णी।

—**वृत्तरत्नाकरः, 3/90**

उदाहरण– य म न स भ ल ग

अनाघ्रा/ तं पुष्पं/ किसल/ यमलू/ नं कर/ रु है

रनाविद्धं रत्नं मधु नवमनास्वादितरसम्।
अखण्डं पुण्यानां फलमिव च तद्रूपमनघं,
न जाने भोक्तारं कमिह समुपस्थास्यति विधिः।।

–अभिज्ञानशाकुन्तलम् 2/10

10. मन्दाक्रान्ता (म भ न त त ग ग) (सत्रह अक्षरों वाला समवृत्त)

मगण, भगण, नगण, दो तगणों और दो गुरुओं से मन्दाक्रान्ता छंद होता है। इसमें चौथे अक्षर के बाद पहली यति, छठे अक्षर के बाद दूसरी यति तथा आठवें अक्षर के बाद तीसरी यति होती है।

संस्कृत में लक्षण एवं उदाहरण–

म	भ	न	त	त	ग ग
ऽ ऽ ऽ	ऽ । ।	। । ।	ऽ ऽ ।	ऽ ऽ ।	ऽ ऽ
मन्दाक्रा	न्ताम्बुधि	र स न	गैर्मो भ	नौतौ ग	युग्मम्

उदाहरण–

म	भ	न	त	त	ग	ग
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धूमज्यो	तिःसलि	ल म रु	तां सन्नि	पातः क्व	मे	घः

सन्देशा/र्थाः क्वप/ टुकर/ णैः प्राणि/ भिः प्राप/ णीयाः।
इत्यौत्सु/क्यादप/ रिगण/ यन्गुह्य/ कस्तंय/ याचे
कामार्ता/हि प्रकृ/ तिकृप/ णा श्चेत/ नाचेत/ नेषु।।

–मेघदूतं पूर्वमेघः, 5

अलङ्कार

अलं करोति इति अलङ्कारः अलङ्कार वह है जो, अलङ्कृत करता है। लोक में जिस प्रकार आभूषण आदि शारीरिक शोभा की वृद्धि में सहायक होते हैं, उसी प्रकार काव्य में **अनुप्रास, उपमा, रूपक** आदि उसकी चारुता की अभिवृद्धि करते हैं।

शब्दालङ्कार और *अर्थालङ्कार*

शब्द और अर्थ को काव्य का शरीर माना गया है। काव्य-शरीर का अलङ्करण भी शब्द एवं अर्थ दोनों ही रूपों में होता है। जो अलङ्कार केवल शब्द की चारुता की अभिवृद्धि करते हैं, वे शब्द पर आश्रित रहने के कारण शब्दालङ्कार कहे जाते हैं, जैसे– अनुप्रास, यमक आदि। जो अलङ्कार अर्थ की मनोहरता की अभिवृद्धि करते हैं, वे अर्थ पर आश्रित होने के कारण अर्थालङ्कार कहे जाते हैं, जैसे– उपमा, रूपक आदि। कुछ अलङ्कार ऐसे होते हैं, जो शब्द और अर्थ दोनों पर आश्रित रहते हैं, वे उभयालङ्कार कहे जाते हैं, जैसे- श्लेष।

अनुप्रास :

अनुप्रासः शब्दसाम्यं वैषम्येऽपि स्वरस्य यत्। (साहित्यदर्पण)

स्वर की विषमता में भी शब्दसाम्य (वर्ण या वर्णसमूह की आवृत्ति) को अनुप्रास (अलङ्कार) कहते हैं।

अधोलिखित श्लोक में अनुप्रास अलङ्कार है-

वहन्ति वर्षन्ति नदन्ति भान्ति,
ध्यायन्ति नृत्यन्ति समाश्वसन्ति।
नद्यो घना मत्तगजा वनान्ताः
प्रियाविहीनाः शिखिनः प्लवङ्गाः।।

श्लेष :

श्लिष्टैः पदैरनेकार्थाभिधाने श्लेष इष्यते।

शिलष्ट पदों के द्वारा अनेक अर्थों का अभिधान होने पर श्लेष (अलङ्कार) कहा जाता है।

उदाहरण–

प्रतिकूलतामुपगते हि विधौ विफलत्वमेति बहुसाधनता।
अवलम्बनाय दिनभर्त्तुरभून्न पतिष्यतः करसहस्रमपि।।

यमक :

सत्यर्थे पृथगर्थायाः स्वरव्यञ्जनसंहतेः।
क्रमेण तेनैवावृत्तिर्यमकं विनिगद्यते।।

–साहित्यदर्पण 10.8

जब वर्ण समूह की उसी क्रम से पुनरावृत्ति की जाए, किंतु आवृत्त वर्ण-समुदाय या तो भिन्नार्थक हो या अंशतः अथवा पूर्णतः निरर्थक हो, तो यमक अलङ्कार कहलता है।

उदाहरण–

प्रकृत्या हिमकोशाढ्यो दूर-सूर्यश्च साम्प्रतम्।
यथार्थनामा सुव्यक्तं हिमवान् हिमवान् गिरिः।।

इस श्लोक में हिमवान् शब्द की आवृत्ति हुई है और दोनों पद भिन्नार्थक हैं। अतः यहाँ पर प्रयुक्त अलङ्कार यमक है, जो श्लोक के सौंदर्य की अभिवृद्धि में सहायक है।

उपमा :

साम्यं वाच्यमवैधर्म्यं वाक्यैक्य उपमा द्वयोः।

एक वाक्य में दो (उपमेय और उपमान) के वैधर्म्य रहित सादृश्य को उपमा (अलङ्कार) कहते हैं।

इस पुस्तक के तृतीय पाठ के अधोलिखित श्लोक में उपमालङ्कार है-

ययातेरिव शर्मिष्ठा भर्तुर्बहुमता भव।
सुतं त्वमपि सम्राजं सेव पूरुमवाप्नुहि।।

रूपक :

रूपकं रूपितारोपो विषये निरपह्नवे।

अनपह्नुत (न छिपाए गए) विषय (उपमेय) में विषयी (उपमान) का आरोप रूपक (अलङ्कार) कहा जाता है।

इस पुस्तक के पञ्चम पाठ के अधोलिखित श्लोक में रूपक अलङ्कार है–

विद्या नाम नरस्य रूपमधिकं प्रच्छन्नगुप्तं धनं,
विद्या भोगकरी यशः सुखकरी विद्या गुरूणां गुरुः।
विद्या बन्धुजनो विदेशगमने विद्या परा देवता,
विद्या राजसु पूज्यते न तु धनं विद्याविहीनः पशुः।।

उत्प्रेक्षा :

भवेत्संभावनोत्प्रेक्षा प्रकृतस्य परात्मना।

पर (उपमान) के द्वारा प्रकृत (उपमेय) की सम्भावना ही उत्प्रेक्षा (अलङ्कार) है

उदाहरण–

लिम्पतीव तमोऽङ्गानि वर्षतीवाञ्जनं नभः।
असत्पुरुषसेवेव दृष्टिर्विफलतां गता।।

अर्थान्तरन्यास :

सामान्यं वा विशेषेण विशेषस्तेन वा यदि।
कार्यं च कारणेनेदं कार्येण च समर्थ्यते।।
साधर्म्येणेतरेणार्थान्तरन्यासोऽष्टधा ततः।

साधर्म्य अथवा वैधर्म्य के द्वारा, सामान्य का विशेष से, विशेष का सामान्य से, कार्य का कारण से और कारण का कार्य से जहाँ समर्थन होता है, वहाँ अर्थान्तरन्यास (अलङ्कार) है।

उदाहरण–

सहसा विदधीत न क्रियामविवेकः परमापदां पदम्।
वृणते हि विमृश्यकारिणं गुणलुब्धाः स्वयमेव सम्पदः।।

अतिशयोक्ति :

सिद्धत्वेऽध्यवसायस्यातिशयोक्तिर्निगद्यते।

अध्यवसाय के सिद्ध होने पर अतिशयोक्ति अलङ्कार होता है। अध्यवसाय का तात्पर्य है– उपमेय के निगरण के साथ उपमान से अभेद का आरोप अर्थात् उपमेय तथा उपमान में अभेद की स्थापना।

उदाहरण–

कथमुपरि कलापिनः कलापो विलसति तस्य तलेऽष्टमीन्दुखण्डम्।
कुवलययुगलं ततो विलोलं तिलकुसुमं तदधः प्रवालमस्मात्।।

व्याजस्तुति :

व्याजस्तुतिर्मुखे निन्दा स्तुतिर्वा रूढिरन्यथा

—काव्यप्रकाशः 112/168

प्रारंभ में निंदा अथवा स्तुति मालूम होती हो, परंतु उससे भिन्न (अर्थात् दीखने वाली निंदा का स्तुति में अथवा स्तुति का निंदा) में पर्यवसान होने पर व्याजस्तुति (अलङ्कार) होता है।

उदाहरण–

व्याजस्तुतिस्तव पयोद ! मयोदितेयं
यज्जीवनाय जगतस्तव जीवनानि
स्तोत्रं तु ते महदिदं घन! धर्मराज !
साहाय्यमर्जयसि यत्पथिकान्निहत्य।।

अनुशंसित ग्रंथ

क्र.सं.	ग्रन्थनाम		लेखक संपादक/प्रकाशक
1.	उपनिषद्	–	गीता प्रेस गोरखपुर,
2.	श्रीमद्भगवद्गीता	–	गीता प्रेस गोरखपुर
3.	अभिज्ञान–शाकुन्तलम्	कालिदास	राम नारायण लाल वेणी प्रसाद, इलाहाबाद
4.	कादम्बरी (शुकनासोपदेशः)	बाणभट्ट	नाग प्रकाशन जवाहरनगर, मल्कागंज दिल्ली–7
5.	नीतिशतकम्	भर्तृहरि	चौखम्बा विद्याभवन वाराणसी, 1973
6.	पञ्चतन्त्रम्	विष्णु शर्मा	मोतीलाल बनारसीदास, दिल्ली 1978
7.	अष्टाङ्गहृदयम्	वाग्भट	नाग प्रकाशन जवाहरनगर मल्कागंज दिल्ली–7
8.	उत्तररामचरितम्	भवभूति	नाग प्रकाशन जवाहरनगर, मल्कागंज दिल्ली–7
9.	कथासरित्सागर	क्षेमेन्द्र	मोतीलाल बनारसी दास, 1970
10.	**SANSKRIT DRAMA In Its. origin. Development and Theory**	A.B. Keith	Oxford Press London 1924
11.	संस्कृत साहित्य का इतिहास	बलदेव उपाध्याय	शारदा मंदिर वाराणसी 1973
12.	संस्कृत नाटक (हिन्दी अनुवाद)	ए.बी. कीथ. अनु. उदय भानुसिंह	मोती लाल बनारसीदास, दिल्ली
13.	वैदिक साहित्य और संस्कृत	बलदेव उपाध्याय	शारदा मंदिर वाराणसी
14.	संस्कृत साहित्य का इतिहास	वाचस्पति गैरोला	चौखम्बा विद्याभवन वाराणसी, 1973
15.	संस्कृत साहित्य की संक्षिप्त रूपरेखा	चन्द्र शेखर पाण्डेय	साहित्य निकेतन 1978 कानपुर 1964
16.	संस्कृत साहित्य का इतिहास	डॉ. उमाशंकर शर्मा ऋषि	चौखम्बा भारती अकादमी, गोपाल मन्दिर लेन, वाराणसी, 1999

गांधी जी का जंतर

तुम्हें एक जंतर देता हूँ। जब भी तुम्हें संदेह हो या तुम्हारा अहम् तुम पर हावी होने लगे, तो यह कसौटी आज़माओ :

जो सबसे गरीब और कमज़ोर आदमी तुमने देखा हो, उसकी शक्ल याद करो और अपने दिल से पूछो कि जो कदम उठाने का तुम विचार कर रहे हो, वह उस आदमी के लिए कितना उपयोगी होगा। क्या उससे उसे कुछ लाभ पहुँचेगा? क्या उससे वह अपने ही जीवन और भाग्य पर कुछ काबू रख सकेगा? यानी क्या उससे उन करोड़ों लोगों को स्वराज्य मिल सकेगा, जिनके पेट भूखे हैं और आत्मा अतृप्त है?

तब तुम देखोगे कि तुम्हारा संदेह मिट रहा है और अहम् समाप्त होता जा रहा है।

मो. क. गांधी

TABLE 5. AVERAGE NUMBER OF INSTRUCTION PERIODS PER WEEK IN THREE-YEAR COLLEGE PREPARATORY AND TERMINAL COURSES IN THREE TYPES OF HIGH SCHOOL, BY SUBJECT [a]

Subject	*General High School*	*Technical High School*		*Vocational High School*
	College preparatory	College preparatory [b]	Terminal [c]	Terminal [d]
English	5	5	6⅔ [e]	4
Social studies	3	2½	2⅔	3
Health education; hygiene	2	2⅔	2⅓	2⅔
Foreign languages	5–6⅔	3⅓ [f]	—	—
Mathematics [g]	5	—	—	—
Mathematics (technical, applied)	—	5	4⅔	4
Science [g]	3⅓	—	—	—
Science (applied)	—	5	3	2⅔
Drawing, art	1⅓	3⅓	—	—
Mechanical or applied drafting	—	—	5⅓	1⅓
Applied technical subjects	—	—	2	2⅓
Shopwork	2	6⅔	13⅓	20
Commercial subjects	1⅔–3⅓	—	—	—
TOTAL	28⅓–31⅔	33½	40	40

[a] Periods last 50 minutes in academic high schools, 45 minutes in other schools; average school year is 38 weeks.
[b] Brooklyn Technical High School.
[c] Course in manufacturing techniques.
[d] Course in machine shop practice.
[e] Including a weekly average of 2 periods of applied English and 1⅔ of library and study.
[f] If in preparation for a college requiring 3 years of a foreign language, a weekly average of 5 periods, in that case, a weekly average of only 3⅓ periods is spent on science.
[g] Instruction time in mathematics and science is generally adjustable between the two subjects in academic high schools; this is also occasionally true in vocational high schools.

subjects than would be possible if the vocational high school were limited to the 25-hour week of the academic high school. Even so, the vocational high school has only 13½ hours a week for these subjects as compared with the 20½ hours accorded them by the academic high school.[10]

English is given throughout the four-year course, usually for five periods a week. In some New York City vocational high schools 'related English' or 'related trade English' is given in addition to the regular program: for example, in the course for printers, this includes the study of punctuation, symbols, and proofreading. In other schools, 'practical English' replaces English composition or literature, as is the case in the 11th and 12th grades of the Central Vocational High School in Cincinnati. In New Jersey, 12th-year English in the automotive repair and service course includes selling service.

Technical courses frequently allot three periods to selected readings and the remaining two to 'applied English,' in which the 'student is taught to write letters of application and fill out application blanks and to write shop and technical reports, specifications, business letters, and technical articles. He is taught, also, how to give oral directions, state his qualifications for a job, describe tools and machines, explain how a job is done and meet and introduce people. Those preparing for certain occupations are given some instruction in sales English.'[11]

'Social studies' is the inclusive term for the integration of courses generally comprising one term of civics, one of economics, two of American, and two of modern world history. Ancient and medieval history are not offered in vocational high schools, and world history rarely so, although the last-named is frequently included in

[10] Health education and music, which are given equal instruction time in both types of school, are not included in these figures. The remaining instruction time in the academic high school is devoted to general shop (1 clock hour) and commercial subjects (2 clock hours). The greater part of the discrepancy in the time accorded by the two types of schools to general education subjects is accounted for by the academic high school's emphasis on foreign languages.

[11] Essex County Technical and Vocational High Schools, op. cit. pp. 53-4.

the study of American history or of modern problems of American democracy. Sometimes a course in general social studies is given as a concise survey of the entire field. Part of the economics course may be integrated with the history courses, particularly those phases that may be related to industrial history, while such topics as the discovery, exploitation, and use of raw materials may be linked to shopwork instruction. Business management often supplements the social studies course. In the vocational high schools of Philadelphia, social studies is classified among related subjects, except in the printing course where it is regarded as a general education subject.[12] On the whole, social studies, although treated as a general education subject, includes more practical subject matter in the vocational, than in the general, high school.

Health education and physical training courses are identical in all types of schools and are offered two or three periods weekly. Technical and vocational high schools frequently add discussion of occupational hazards and their relation to health as part of shop and technical instruction.

With rare exceptions, foreign languages are not offered by the vocational high school curriculum or the technical high school terminal unit courses. They are, however, included in the college preparatory courses of some technical high schools.

Related Subjects

Mathematics and science, both of which are general education subjects in the traditional high school, and the large group of technical studies are related subjects in vocational high schools. Mathematics, for example, generally 'consists of a selection of a few special items from arithmetic, algebra, geometry and trigonometry which are used in the occupation being taught. They are taught by repeated application to practical occupational problems.'[13]

[12] Philadelphia, Pa., Public Education Board, *Program of Studies of Senior High and Vocational Schools* (1942), pp. 41–4. This classification may be motivated by the desire to comply with conditions prerequisite for federal financial aid, which is admissible for preparation and salaries of teachers of related, but not of cultural, subjects.

[13] Essex County Technical and Vocational High Schools, op. cit. p. 54.

The shortcuts actually used in the trade, empirical formulas, rule-of-thumb methods, and the like, are usually included in the related shop mathematics course.[14] Other related subjects are similarly treated.

Related (or applied) trade mathematics is usually given five periods weekly for three years, and applied science for two years, or vice versa, an arrangement that corresponds to the total time devoted to mathematics and science in traditional high schools. Whereas in the latter these minimum requirements may be rounded out by electives, in the vocational high school they are supplemented by other prescribed related subjects.

Thus the mathematics course in the automotive repair and service trade course in the Brooklyn High School of Automotive Trades includes the study of tables, formulas, measuring instruments, selected items from plane geometry, and business mathematics and practice. Ignition and lighting system is included in applied science. The rest of the time is given to other related subjects—trade drawing, radio code, Diesel theory and car driving, each occupying from half a term to a term and a half. A course in machine shop practice in the Essex County vocational high schools includes blueprint reading and shop sketching (one term); electrical laboratory and theory (two terms); applied drafting, applied metallurgy, applied mechanics, and strength of materials (two terms). In the field of bricklaying the same schools offer applied drafting (shop sketching), building construction details; plan reading, and quantity estimating. Related subjects in a printing course include estimating (costs and paper requirements); English for printers; art in printing, such as the layout of a newspaper, proper margins and title pages; science as related to printing; and the hygiene of the trade.[15]

What standards can be achieved in the teaching of these related subjects is a controversial issue. According to one official appraisal,

[14] U S. Federal Board for Vocational Education, *The Training of Teachers for Trade and Industrial Education*, Bulletin No. 150 (Trade and Industrial Series, No. 42) (Washington, 1930), p. 25.

[15] U.S. Office of Education. *Statement of Policies* . . . (cited above) (Washington, 1937), p. 52.

'a related mathematics course extending over two years can be a real bona fide course in mathematics which will develop a much larger degree of actual ability to use mathematics in solving specific problems than the traditional theoretical courses are able to do . . . The study of related trade science should have a world of meaning to a trade school student and develop a real comprehension of scientific principles in a way that no amount of formal study of traditional high school physics, elementary mechanics or chemistry will ordinarily develop . . .' [16]

It is further pointed out that in the teaching of mathematics and science general experience has shown that no principle should be taught in advance of application and no application drawn from fields with which no previous experience is connected. The related subjects as offered in vocational high schools are therefore considered to be richer in educational possibilities from the standpoint of both practical application and general educational objectives.

But notwithstanding the praise given to this kind of teaching, neither this nor any other statement on the subject claims that in the field of mathematics and science are vocational high schools able to approach the academic standards of the general high school. The prescribed way to teach related subjects may be a valuable supplement to the training of a future worker, but it may be doubted—and actually it has never been claimed—that it imparts sufficient fundamental knowledge of mathematics and science, or adequately develops the ability to think independently or to draw logical conclusions in these fields. It may even be doubted that the student grasps the principles underlying the work methods he has mastered.

The teaching of mathematics in technical high schools is far less narrowly conceived. In fact, in some schools both mathematics and science are taught on a higher level than in most academic high schools, and are considered general subjects to be adjusted to the content of each course rather than related subjects. At Brooklyn

[16] U.S. Federal Board for Vocational Education, op. cit. pp. 53–7.

Technical High School, for example, the program in mathematics (three years in the terminal course, four years in the technical college preparatory course) is fundamentally theoretical even in those courses designated as 'technical mathematics' and 'technical trigonometry.' The terminal three-year course of 'pure and applied mathematics' includes elementary and intermediate algebra, plane geometry, some solid geometry, and technical trigonometry.[17]

Suggestions for shaping the technical portion of a technical high school curriculum are offered by the Supervisor of Technical and Cooperative Education of the State of New York.[18] These show how vocational-technical and related subjects other than mathematics and science can be combined in well-rounded programs.

For example, for a course in architectural drawing and building construction the following distribution of periods is recommended: 1st and 2nd terms—industrial processes, 5, and technical drawing, 6 (mechanical, 4, and freehand, 2); 3rd and 4th terms—industrial chemistry, 5, and technical drawing, 6 (mechanical, 4, and freehand, 2); 5th and 6th terms—applied mechanics and strength of materials, 5, and architectural drawing and design, 4; 7th term—architectural drawing and design, 14; 8th term—architectural drawing and design, 20.

The suggested program for a technical mechanical course is the same in the first two years as above. The remaining time is divided into periods as follows: 5th and 6th terms—applied mechanics and strength of materials, 5, and machine drawing and design, 4; 7th term—steam and gas engines, 5, heat treatment of metals and shop management, 5, and machine drawing and design, 4; 8th term—power generation and distribution, 5, and machine drawing and design, 4.

Describing the content and goals of such a subject as industrial processes, one school states that it 'includes the study of sources, processes, characteristics, and uses of the basic materials of indus-

[17] Brooklyn Technical High School, *Handbook*, vol. 11 (1944), pp. 27-30.

[18] University of the State of New York, *The Organization and Administration of Technical Courses in Secondary Schools*, Bulletin No. 1086 (Albany, 1937), pp. 28-9.

try and engineering. The topics are selected to give the pupils a background of experience for future work in the sciences, a knowledge of the materials used in the shops, an appreciation of the work of the men who helped in the development of industry, as well as an understanding of the qualifications and abilities demanded by industry of those aspiring to fill technical positions.'[10] Such a course as the strength of materials requires the student to make computations involving the simple stresses, modulus of elasticity, moment of inertia, deflection, design of simple and overhanging beams, safe loads on columns, riveted and welded joints; perform mechanical tests with a variety of testing machines, and write a report on each test; study the mechanical properties of materials of construction.

SHOPWORK

Occupying, as it does, at least half the instruction time, shopwork is the hub of the vocational high school curriculum. Its basic principle is to introduce the student to the fundamental operations, manipulations, and characteristics of a trade, and to produce intelligent and manually well-prepared candidates for jobs in industry. In unit trade schools the shopwork is centered in one trade, but it is adjusted to the educational and training needs of the student and therefore embraces the elements of other trades as well, thus affording better opportunities to test the student's abilities, to broaden his background and develop flexibility, and to encourage the development of wider skills. Such extensiveness does not, of course, permit intensity of training comparable to that given in apprenticeship. Neither can it provide the speed and accuracy achieved by on-the-job training.

A few examples may serve to clarify the nature of a shopwork curriculum in the vocational high schools. For instance, the Machine and Metal Trades High School of New York City prepares students for the following trades: machine shop, sheet metal, patternmaking, mechanical drafting, foundry. Shopwork subjects in-

[10] Brooklyn Technical High School, op. cit. p. 34.

clude the heat treatment of metals, and welding. Instruction in the latter is part of most metal trades curriculums, though welding is also regarded as an independent trade. Sheet metal shopwork comprises general sheet metal practice, layouts, duct construction, and complementary shop training in electric and acetylene welding. Students of mechanical drafting learn general drafting, technical sketching, patent office standards, sheet metal drafting, piping details, layouts and mechanisms, machine details and assembly, and tool design; in addition they receive complementary shop training in patternmaking, machine shop, and sheet metal.

The nine courses offered in the Central High School of Needle Trades of New York are organized on a similar basis: fur manufacturing, shoe manufacturing and design, patternmaking, tailoring, dressmaking, dress manufacturing, millinery, interior decorating and novelty, and draping costume design. The course in shoe manufacturing and design includes design, cutting, fitting, stitching, lasting, stock fitting, heeling, finishing, cleaning and packing, practice in shoe manufacturing. The student of costume design learns fashion design, women's patternmaking and design, power machine operation, draping, grading, textile design, art appreciation, history of costume, and museum. It is significant that most of the courses include designing and allied work, subjects usually considered a trade in themselves and of a semiprofessional nature.

In the automotive trades high schools the students are given instruction in motor, electrical equipment, and body and fender work, subjects that cover what are in actual practice two or even three different trades. In the Essex County vocational high schools the course includes the study of auto chassis and machine shop in the first year, internal combustion engines in the second year, and auto testing and service in the third year. At the East New York Vocational High School shopwork in grades 10 to 12 of the electrical installation and practice course comprises low tension work—signal and alarm systems, and lighting (domestic and commercial); wiring for heat and power; radio (transmission and

receiving); code practice, photoelectric application; motors and generators, installations and control, operating characteristics and maintenance. Students in the commercial photography course of the Essex County schools learn the fundamental processes, and elementary and advanced techniques in the photography laboratory and studio, while in the course for industrial clerk training the students operate the tool cribs and material bins of five different shops and study the tools, materials, and procedures in each.

In general, the curriculums list the subjects but do not indicate the operations to be taught. It is assumed that standard operations and manipulations for any given trade constitute the core of shopwork. Beyond that, the school staff or even the individual teacher often determines what other operations and performances are to be included in the instruction.

In the technical high schools 'shopwork, though essential, is organized to supplement, illustrate and clarify the instruction in technical subjects. The shop teacher serves the technical teacher. The pupil works on as large a variety of projects in the shop as possible, but the degree of skill required is not so great as in the industrial high school . . .'[20] Shopwork, in addition to teaching skills, is in itself considered a means of familiarizing the student with a wide range of technical problems in different phases of production. In each of the first two years at Brooklyn Technical High School, for instance, shop courses in patternmaking, foundry practice, sheet metal, and elementary machine shop are required of all students for ten periods a week. Patternmaking and elementary machine shop are 20-week courses; foundry practice and sheet metal, 10-week courses. The amount and nature of shop work in the last two years depend on the course of study.

The aim and method of teaching shopwork are well illustrated by the sheet metal shopwork course in Brooklyn Technical High School which is 'planned to acquaint the student with the fundamentals of sheet metal work, and to give him a limited amount of practice in the use of the various machines and tools used in the

[20] University of the State of New York, op. cit. p. 18.

industry. The course, organized according to the difficulties of learning, consists of a series of problems involving parallel line developments, radial line developments, and triangulation. These problems in turn lead up to the design and layout of a project in sheet metal, into which are incorporated the three styles of pattern development and many of the operations of the trade. Included in this work are marking, cutting, punching, forming, riveting, seaming, soldering, etc. In conjunction with the work mentioned above, information is introduced concerning various sheet metals and their properties, and other scientific and chemical information as applied to the trade.' [21]

Ninth Grade or the 'Exploratory' Year

In studying the curriculums of vocational and technical high schools, special attention must be given to the 9th grade, or first high school year, which has come to be known in the high school system as the 'exploratory' year. This adjustment of the 9th grade was the logical outcome of the vast qualitative and quantitative expansion of the high school, which demanded that some means be devised to screen the huge student body and direct it into proper educational channels. Since the average 8th grade graduate is unaware of the varied opportunities offered by the different high schools and their many courses of study, and is therefore unable to choose the one best suited to his particular needs, some provision had to be made for guiding him according to his individual abilities, capacities, interests, and aims. An exploratory 9th grade, in which these abilities and aims could be brought to light, has furnished the most satisfactory answer to the problem.

The vocational high school has accepted the idea of the exploratory year in shaping its program and making the curriculum much more flexible than that of the 10th to 12th grades. The Essex County vocational high schools, for example, offer three basic courses for the 9th grade. The students are sent through several shops or departments related to the field in which they are interested and

[21] Brooklyn Technical High School, op. cit. p. 54.

stay in each of them for six or eight weeks. Those who prepare for occupations in carpentry, cabinetwork, or patternmaking, work consecutively in the general shop, carpentry shop, cabinet shop, patternmaking shop, and mechanical drafting department. After satisfactory completion of the basic course, students are eligible to choose any one of the occupational courses.

A similar practice is observed in New York City where all students who enter vocational high schools directly from elementary school are obliged to spend the first year in exploratory work and are given shop experience in several trade subjects. In general, no more than 15 weekly periods or less than 12 clock hours of shopwork (out of 35 weekly periods for all subjects) are required, thus remaining somewhat below the 50 per cent required by the Smith-Hughes Act for shopwork. An important aspect of the exploratory year in New York is that mathematics and science are taught as fundamental, rather than as related, subjects; they take on a related character only at the beginning of the 10th grade.

In other parts of the country, some vocational as well as technical schools expand this scheme into a graduated vocational curriculum for the 10th grade. In the Cincinnati vocational high schools, as has already been noted, the 9th and 10th grades are academic in emphasis but include beginning shopwork, while during the 11th and 12th grades the state requirements for secondary vocational education and training are met; in addition the 12th year may be spent on a cooperative basis if jobs are available.

A system that is not quite comparable but is also characterized by the graduated vocational approach has been adopted by the Brooklyn Technical High School. The differentiation of the curriculums of eight courses does not start until the 11th grade; during the 9th and 10th grades all students take the same basic course. No general policy for technical high schools elsewhere has been elaborated thus far; their programs are still in the experimental stage.

VI

Vocational High School Teachers, Guidance Counselors, and Advisory Committees

Teacher Training

WITH the establishment of vocational high schools there arose the need for a new type of teacher and new methods of teacher training. The traditional academic teacher is not equipped to teach shopwork; nor can he, without additional training, comply with the requirements for teaching related subjects. Thus, recognizing the necessity for developing shop teachers, the federal government, through the Smith-Hughes and George-Deen acts, appropriates to the states funds for teacher training to be matched by equal sums appropriated by the state governments.

For 1942, the peak year in vocational education, government statistics with regard to teachers of vocational courses in federally aided schools or classes showed a total of 27,830 vocational teachers in all-day classes,[1] 16,588 in evening classes, and 16,275 in part-time classes.[2] These figures, however, only suggest the actual situation, not merely because they are restricted to federally aided classes but because they take no account of trade teachers in private schools and shop teachers in technical schools. On the other hand, the enumeration may contain duplications since the same teachers are likely to have been members of more than one group.

With reference to the problem with which this study is mainly concerned—vocational education in secondary schools—a break-

[1] Including 403 in agricultural day-unit classes.

[2] Computed from U S Office of Education, *Digest of Annual Reports of State Boards for Vocational Education . . .* 1943 (Washington, 1944), p. 78.

down shows the following picture: 9,457 teachers in all-day agricultural classes, 7,651 in trade and industrial classes, and 10,722 in home economics classes.[8] Considering that the number of students in home economics classes was almost twice that in trade and industrial classes, the number of teachers for trade and industrial training compares favorably. To what extent this refers to shop instruction alone is difficult to determine since in some schools shop teachers give the instruction in related subjects as well, while in others these subjects are covered by the teachers of academic subjects.

The teachers of English and social sciences in the vocational high schools are not included in the above statistics since they are not among those for whom the state is entitled to receive federal aid. They are the same type of teachers as those in the general high school and may be shifted from one kind of school to another without making any save minor adjustments. The statistics refer exclusively to shop teachers and to some of the teachers of related subjects. Their number increased from 2,300 in 1928 to about 8,000 in 1943, but the number of vocational high school students increased at an even greater rate within that period. From 1928 to 1932 the teacher-student ratio was 1:24; between 1934 and 1942 it averaged about 1:30. In 1942, which was not a normal year because of the war, the ratio stood at 1:38, but in 1943, when high school classes declined in number, the ratio reverted to 1:24.5.

The failure of teacher training to keep pace with the rapid increase in the number of students is regrettable. It may be partly attributed to the fact that, as the economic depression of the thirties abated, craftsmen, whose replacement had become increasingly difficult, were urgently needed in industry and found conditions there which made them little inclined to give up their jobs to become shop teachers. Inasmuch as good trade teachers usually have the opportunity to find industrial employment in times of accelerated business activity, their replacement rate is accordingly high. From 10 to 12 newly qualified teachers are needed annually

[8] Ibid p. 78. The figure on agricultural classes includes day-unit classes.

for every 100 employed teachers in all-day trade and industrial education, the rate rises to 50 per 100 for trade extension programs. Expansion of the vocational education system will not be possible unless the vocational teaching staff is stabilized by being made more attractive financially and by being granted greater prestige.

The three sources of teachers of shopwork and of related subjects, in so far as the latter are not drawn from the ranks of academic teachers, are journeymen, former engineers and technicians, and teachers of industrial arts in the elementary and junior high school systems. The Smith-Hughes Act, in appropriating funds for teacher training, specifies that such training 'shall be given only to persons who have had adequate vocational experience or contact in the line of work for which they are preparing themselves as teachers or who are acquiring such experience or contact as a part of their training.' But the federal legislation makes no stipulations with regard to the educational background and work experience of those who are to do the training or with regard to the methods of training. The determination of qualifications for these teachers of teachers and the establishment of training institutions, programs, and methods are left to the states, subject to the approval of the Office of Education.

In 1942, there were 198 federally aided training institutions or agencies, a substantial part of which offered training in several fields: teachers of agricultural subjects were trained in 118 institutions, of trade and industry in 107, of home economics in 158, and of distributive education in 61.[4] Additional teacher-training classes were conducted without federal aid in substantial numbers in Texas (26), North Carolina (20), Massachusetts (13), Pennsylvania (10), California (9), Iowa (5), and Virginia (5). Total allotments made under the Smith-Hughes Act for teacher training in the fiscal year 1943–44 amounted to approximately 1.1 million dollars, of which only a little more than $300,000 went to training teachers of trade and industrial subjects.[5]

[4] Ibid. p. 81.

[5] U.S. Office of Education, *Digest of Annual Reports . . .* 1944 (Washing-

The fact that state teaching programs require federal approval insures certain minimum standards, but even without it there would be a number of common requirements for teacher candidates, such as good character, good health, and American citizenship, a minimum age limit of twenty-one to twenty-five years, and favorable references. The professional and educational requirements for part-time and evening teachers are less strict than those for all-day teachers. Shop teachers, other than engineers and with the exception of those in continuation schools, must be recognized trade experts, who have completed an apprenticeship and worked as journeymen for two or three years. There are many more journeymen among shop teachers than there are engineers and industrial arts teachers—a favorable situation, on the whole, because actual experience and knowledge gained on the job are a definite asset in teaching.

All teacher-training programs are divided into two complementary parts—pre-service training and in-service training; the latter is also referred to as professional improvement.

A typical state program for training teachers of vocational education is that formulated by the Washington State Board for Vocational Education, which stipulates detailed requirements ranging all the way from trade and educational background to the necessary amount of in-service training.[6] This program discloses that the all-day vocational high school teachers usually start out as evening school trade extension teachers, most of whom have had no previous teaching experience. They generally obtain their first teacher training from the local supervisor of trade and industrial education, in the form of a few hours devoted to trade analysis, simple teaching methods, and regulations of the school in which the candidate is to teach. After the candidate takes over a class, the

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ton, 1945), p. 72. The sums spent for training teachers of agricultural subjects was approximately $353,000 and teachers of home economics about $355,000.

[6] U.S. Office of Education, *The State and the Preservice Preparation of Teachers of Vocational Education*, Vocational Division Bulletin No. 219 (Washington, 1941), p. 121.

supervisor follows up the pre-service training by assisting him as need arises. Evening school trade extension teachers are often employed as journeymen during the day and divide their evenings between teaching and preparation for teacher training.

The Pennsylvania program offers another interesting example of teacher training requirements.[7] Candidates are subjected to a thorough oral and written test, the purpose of which is to check the quality of trade knowledge and skill. But before they can become candidates they must have spent at least six years in the trade, of which two have been on a proven journeyman's level. Minimum certification requirements for shop teachers in all-day classes include, in addition to trade experience, twenty-four semester hours of approved professional courses in trade and industrial education, of which six were devoted to observation and practice teaching; additional hours must have been spent on professional courses in general education. Teachers of related subjects must have had at least two years of industrial experience coupled with much higher academic qualifications than are demanded of shop teachers.

Pre-service training of teachers may be the direct function of the state board of education or it may be delegated to a teacher-training institution, it is usually at the college level and under the constant supervision of the state board. These institutions offer either resident or extension courses given by itinerant teachers or by local supervisors. To enable craftsmen to take the courses without relinquishing their jobs, the instruction is being given increasingly on an extension basis after working hours; thus it involves prolonged periods of study. Courses are given in all the large cities and in some small ones; summer courses often attract the largest number of students. Several weeks of full-time practice teaching, carefully supervised by the local authorities, are frequently required. In general, 'students have contact with day and evening classes, attend teachers' meetings, help out with extra-curricular activities. In short, they get as many practical experiences as can be secured in the time available. They make sketches of shop lay-

[7] Ibid. p. 121.

outs, make records of text and reference books used, secure sample copies of instruction sheets and record forms of many kinds that are in use. They also get cost data on equipment and supplies and learn where these are obtained. Students are required to prepare notebooks in which much of this information is recorded for future use.'[8]

In addition to providing general, comprehensive pre-service teacher training, the same institutions serve as in-service training centers, giving short inclusive courses for employed teachers. They also furnish many of the itinerant teacher trainers who conduct extension courses for new and employed teachers. In-service training is given, for the most part, in evening and summer courses, and is regarded as probably the most successful method of training.

The 100 federally aided trade and industrial courses given in 1943 employed 547 teacher trainers, the highest number in the history of vocational education in this country. The trainers of trade and industrial teachers constituted less than a third of the total of 1,779 in all branches; if, however, one deducts the number of female trainers, most of whom instruct home economics teachers, the 493 male trainers of trade and industrial teachers constituted almost half the remaining total of 1,022.[9] The number varies from state to state; in some, teacher-training activity under state auspices has not yet attained substantial proportions.

Requirements for trainers of trade and industrial teachers show a remarkable similarity in most states. All but two stipulate that these trainers have experience as wage earners in a trade or industrial occupation over a period ranging from 1 to 8 years; 42 plans specify 3 years. Furthermore, '41 state plans require trade and industrial class teaching experience, with 36 plans specifying 3 years of such experience and the range from 2 to 5 years. 45 plans require a specified number of clock-hours of trade and industrial courses with a range from 180 to 640 clock hours. 26 plans specify

[8] Ibid. p. 125.

[9] U.S. Office of Education, *Digest of Annual Reports . . . 1943* (cited above), p. 81.

4 years of college training or its equivalent, while others range downward to a plan which stipulates approved high school courses. 15 state plans specify varying degrees of technical training with the highest requirement being that of graduation from a technical college or equivalent.' [10]

Among the subjects most commonly offered to vocational teachers for pre-service and in-service training are the following: job, operation, trade, or occupational analysis; the organization of subject matter from a teaching standpoint or from the angle of learning difficulties; methods of teaching, both specifically and generally, applied to individual shop and related subjects; the use of auxiliary teaching material, such as educational films and working models and the various types of job or operation sheets; courses in vocational guidance; informational courses, such as administration and organization of trade and industrial education or the history of industrial education; shop organization for instructional purposes; courses in mental testing; various types of subject matter courses to round out a teacher's experience or training; research, and foremanship work.[11]

From this list it is apparent that the teacher-training subjects are eminently practical. For the most part they do not pertain directly to the specific trade, but outline the methods by which this trade knowledge and skill can best be imparted; in other words, the courses concentrate on how to teach the subjects that are usually learned through practical experience. This choice of the subjects of instruction is based on the fact that the teacher candidate has acquired his knowledge and his skill before entering upon his training as a teacher; no extension of this knowledge is considered necessary. But by virtue of his work experience the candidate is so steeped in his subject that he performs most operations almost unconsciously, taking for granted the ease of certain procedures that students may find difficult to master. He has, therefore, to be

[10] U.S. Office of Education, *The State . . .* (cited above), p. 48.

[11] U.S Federal Board for Vocational Education, *The Training of Teachers for Trade and Industrial Education,* Bulletin No. 150 (Trade and Industrial Series, No. 42) (Washington, 1930), pp. 19–20.

trained to rediscover all the elements of his trade so that he may teach them thoroughly and precisely. He has also to be familiarized with the breadth of the economy and of the trades and occupations of which the various jobs are only a part. And furthermore, he must recognize the basic difference between shop practice in a vocational high school and industrial production—that the main purpose of the school shop is not actual production but the learning of the methods of producing goods. All these major aspects of teacher training are covered by the subjects of instruction listed above.

Either when he starts teaching or when he applies for a certificate, the vocational teacher takes an examination, which in many cases includes a performance test but usually deals mainly with pedagogy, informational subjects, and even administrative matters in the vocational field. The employed teacher is also observed periodically and rated on his qualities and development by the principal or local supervisor. An essential point, in addition to the usual standards for rating teachers, is whether the trade projects and operations which the teacher assigns to the class and the methods employed in their execution are up to date. It is for this reason that vocational teachers, on their own initiative and with the encouragement of vocational education authorities, repeatedly spend a summer as industrial workers in their own fields.

Under wartime pressures certain changes had to be made in order to expand and accelerate the training of vocational teachers. There were a number of excellent war training programs, but many of the measures they employed would not be feasible in times of normal industrial production. The few features that constitute genuine improvements in training techniques rather than mere emergency expedients stand a good chance of incorporation in permanent training programs. Among them is the trend toward decentralization through extension services and the wider inclusion of technical material in the teacher-training curriculum—further evidence of the ever-increasing importance of technical education, so frequently emphasized in this study.

Occupational Guidance Services

In the field of vocational guidance there are two general areas. One is concerned chiefly with the abilities and interests of the individual, the other area is related to factors aside from the individual, such as occupational information, training opportunities, community relationships, and social activities.[12] Unless counseling grants due consideration to both sides of the picture, it cannot be either intelligent or effective.

The emergence of vocational education at the secondary level did not alter the basic principles of determining individual characteristics, though more precise reference to the future vocation was made possible by the organization and methods of in-school vocational education and training. Guidance based on occupational information, however, began to require redefinition when, in an increasing number of cases, a curriculum closely related to a future vocation was substituted for a curriculum designed to prepare for all the professions but indifferent to the future occupational needs of the majority of high school students. That something new had to be devised in this field of guidance was recognized at the top level by the creation of the Occupational Information and Guidance Service in the Vocational Division of the United States Office of Education. The chief of this Service bluntly asserted in 1945 that 'the occupational information and guidance aspects of vocational education are in about the same state as training in trade and industry or agriculture was in 1920.'[13]

With regard to discovering and evaluating the characteristics of the individual, undeniable progress has been made in recent years. The establishment of individual records; administration of appropriate aptitude, interest, personality, trade and scholastic

[12] Eugenie A Leonard and Anthony C. Tucker, *The Individual Inventory in Guidance Programs in Secondary Schools*, U.S. Office of Education Vocational Division Bulletin No 215 (Washington, 1941), p. 1.

[13] Harry A. Jager, 'Vocational Guidance Is Needed,' Science Research Associates, *Guidance Reprints*, No. 192. (Reprinted from *Illinois Vocational Progress*, vol. 2, no. 4, May 1945.)

achievement tests; preparation of scores for such tests; gathering of information on hobbies, special interests, personality traits and aptitudes, on financial status, social background, family or personal responsibilities—all these have been developed and refined.[14]

Actually, however, until very recently, counseling was in no position to utilize these modern methods advantageously. In the first place, only a small number of schools had established guidance services. Of approximately 25,000 public high schools, only some 1,300 or hardly more than 5 per cent were listed by the 1938 Biennial Survey of the United States Office of Education as having one or more persons each—a total of 2,273 for all together—who devoted at least half time to counseling.[15] Answers to an Office of Education questionnaire, however, revealed that even those schools that employed counselors operated under great handicaps, chief among them the lack of interest and adequate training on the part of those engaged in guidance work.[16] No less than 40 per cent of the small number of schools maintaining guidance services reported that their counselors were deficient in industrial experience, in the ability to interpret test results, or in some other equally vital qualification. This shortage of trained guidance counselors is a consequence not only of a lag in entering a newly opened area of educational activity, but also of the currently noticeable decline in the number of those persons willing to join the teaching profession in any capacity.

With regard to the availability of guidance counselors, present conditions in vocational high schools are hardly better than in general high schools. In 1944, of 43 vocational high schools in 35 states, named by state authorities as outstanding, only 13 had full-time counselors; of 114 high schools with vocational departments, located in 35 states and cited by the Vocational Division of the Office of Education as outstanding, only 33 had full-time counselors. It can be assumed, therefore, that in vocational high schools, as in the

[14] U.S. War Manpower Commission, *The Training of Vocational Guidance Counselors* (Washington, 1944), pp. 1–2.

[15] Leonard and Tucker, op. cit. p. 2.

[16] Ibid. p. 59

general high schools, about 75 per cent of all students were being deprived of the benefits of systematic guidance services.[17] Since 1944 the states have striven to improve the situation. Full-time and part-time counselors have been added to school personnel in many communities; local schools have been granted state funds for the support of guidance programs, and publications in the educational field have devoted attention to guidance counseling and testing for the purpose of encouraging new counselors to use approved methods and to improve their techniques.[18]

In vocational high schools, guidance in the 9th grade is extremely important because the results of the exploratory work in this year weigh heavily in the choice of the vocation. The student's performance in the basic courses or in the manifold types of shopwork offered in the 9th grade influences his program for the next three years, the content of which is directed toward his chosen vocation. The abilities and interests of the individual are thus classified early in the vocational high school period, though good schools make it possible to reverse a decision and to transfer to another course if the original choice proves faulty or if the development of new aptitudes calls for reconsideration.

For those students who spend their exploratory year in junior high schools and then transfer to the 10th grade of a vocational high school, other provision has to be made. As has already been mentioned, shop equipment in junior high schools is often insufficient for the detection of the individual capacities of that great body of students who will engage in manual work. This imposes upon the vocational high schools the task of combining regular 10th-grade instruction with some exploratory work. The wisdom of the student's choice of a course has to be checked and the guidance counselor must be provided with data essential for his work in the individual area.

The other area—that of occupational guidance—has been served

[17] Jager, op. cit.

[18] U.S. Office of Education, *Digest of Annual Reports . . . 1944* (Washington, 1945), pp. 34-6.

by the creation of the previously mentioned Occupational Information and Guidance Service, with the necessary cooperation of the United States Employment Service. In 1934, a systematic program of occupational research was inaugurated by the USES. Subsequently designated as the Occupational Analysis Section of the USES, and conducted after 1943 as the Division of Occupational Analysis and Manning Tables in the Bureau of Manpower Utilization of the War Manpower Commission, this program was designed to develop authoritative information concerning industries and jobs and to discover the qualifications required for success in various occupations. The work of the Division was, from the first, cooperative in nature and was supported not only by both federal and state funds but also by grants from private foundations. Employers, workers, schools and colleges, and persons in government services and all branches of the armed services 'cooperated in the job studies and in the adaptation and use of research materials as aids in improving occupational adjustment in this and other countries.'[19] Job analysis, definition, and classification in a systematic manner, the establishment of families of occupations, the determination of physical demands for jobs, and measurement of occupational aptitudes were among the main subjects of investigation.

In the course of the vast armament program, the USES assembled considerable data on labor supply, demand, and shortages, and on turnover, training, and utilization of labor. Currently, through special programs for veterans, effective employment counseling is being provided by state employment offices for applicants who seek satisfactory placement. The value of this program is not limited to veterans, since in the future the collaboration of public officers with vocational high school advisory boards will extend its benefits to school-leaving applicants for jobs.

At the local level, a series of surveys conducted to obtain information for use in vocational guidance have been adopted as a basis for curriculum planning, and are comprehensively analyzed in a

[19] *Occupations*, vol. 22, no. 7 (April 1944), p. 389.

publication of the Vocational Division of the Office of Education.[20] These are classified as youth surveys and consist of the following types: follow-up surveys which are usually inquiries into the circumstances of individuals who have had a common experience, such as graduates of a particular high school or university; surveys of particular occupations and industries, usually known as occupational outlines, occupational descriptions, or occupational studies; surveys of job opportunities or openings for beginning workers; surveys of unemployment; local labor market studies which, of course, are focused on fluctuations in the local situation rather than on the distribution of the entire labor supply. Joint studies by the United States Department of Labor and the Office of Education, such as that on occupational data for counselors,[21] also demonstrate an increasing inclination to combine all efforts for intelligent vocational counseling.

Structure and Functions of Advisory Committees

In the field of in-school vocational education and training, numerous advisory committees constitute a firmly entrenched element. Their prototype is the Federal Board for Vocational Education, created in 1917 to administer the Smith-Hughes Act and granted broader powers than have been given to any of the lesser committees. The Board has six members, three of whom—the Secretary of Agriculture, the Secretary of Commerce, and the Secretary of Labor—are members ex officio; the other three are lay members representing the interests of agriculture, manufacturers and commerce, and labor, respectively, and are appointed by the President with the advice and consent of the Senate.[22]

One of the most important developments in the administration

[20] Marguerite Wykoff Zapoleon, *Community Occupational Surveys*, U.S. Office of Education Vocational Division Bulletin No. 223 (Occupational Information and Guidance Series, No. 10) (Washington, 1942).

[21] U.S. Labor Statistics Bureau and Office of Education, *Occupational Data for Counselors*, U.S. Office of Education Bulletin No. 817 (Washington, 1945).

[22] U.S. Office of Education, *Digest of Annual Reports . . .* 1944 (cited above), pp. 54-5.

of the Smith-Hughes Act was the transfer of the functions of the Board to the Commissioner of Education, a move that established that vocational education and training is above all an educational, not an economic, task. But in order to insure the future cooperation of all interested governmental agencies and representatives of economic groups that would profit by the progress of vocational education, the Federal Board was retained as a Federal Advisory Board for Vocational Education. Composed of the same elements as its predecessor, the Board is designed to advise the Commissioner of Education on various phases of vocational education and to aid him in formulating and implementing policies in keeping with the needs and desires of the groups represented by the Board members. This scheme of organization leaves to the educational authorities the predominant position that they should retain in all educational matters, and does not permit narrow vocational or private economic interests to prevail. At the same time, it opens the way to systematic cooperation between representatives of education and those of the national economy. This method is indispensable for any practical planning of vocational education and might well be considered a precedent for similar collaboration in other educational fields.

In order to become really workable the advisory boards had to be developed at regional and local levels, as well as national, and had also to be extended to special fields of vocational education. At the federal level, industrial and technical education is served by a technical advisory committee on trade and industrial education, established by the Commissioner of Education in 1936. The committee, consisting of nine members representing vocational educators, employers, and labor equally, advises the Office of Education on policies and practices in setting up and operating training programs in the entire field of trade and industrial education. In addition, since October 1940 there has been the Joint AFL-CIO Consulting Committee which, with the consultant in employee-employer relations of the Office of Education, advises the Commissioner of Education on employee-employer problems.

Also at the federal level is the recently organized Consulting Committee on Vocational-Technical Education, which has been engaged in studying vocational-technical training programs, facilities, and needs. This Committee, whose work is repeatedly cited by this study, is composed of twenty-six members, including a working committee of twelve which meets with the chairman of the Consulting Committee from time to time.[23] Similar advisory committees have been established in the nonindustrial fields of vocational education.

State and local advisory committees have been created in numerous instances with the encouragement of the Office of Education. These committees are set up to advise school authorities 'in matters concerning the program and to make suggestions and recommendations for the guidance of the state and local authorities in whom authority is vested.' The Office of Education views this method as the 'democratic means of group participation in the administrative process' and as the expression of 'the fact that vocational education is a cooperative enterprise among public schools, management and labor.' [24]

Such advisory committees are in operation in each of the 48 states, the District of Columbia, and Puerto Rico, and in every school district in which federally aided vocational education is established; the number reporting to the Office of Education is about 1,500.[25] The employer-employee balance is equal, and care has been taken to have the various organizations of management and labor adequately represented. Occasionally, and especially in the field of trade and industrial education, additional representatives have been appointed in order to cover the manifold trades and branches of industry.

Beyond the observance of certain fundamental principles in

[23] U.S. Office of Education, *Digest of Annual Reports . . . 1943* (cited above), pp. 37-9.

[24] U.S Office of Education, *Representative Advisory Committees* (Washington, 1943), p. 7.

[25] F. Theodore Struck, *Foundations of Industrial Education* (New York, 1930), p. 123.

setting up these committees there is a good bit of variety among them. State advisory committees, for example, have usually been established to deal with general policies of vocational education of more than local concern, but in a few instances they have been created to assist with training problems of single industries or even with special phases of training. In some states, regional committees handle the training problems of single industries or training problems common to a particular part of the state. The same variations exist among local committees. In certain communities, general local advisory committees have been appointed to advise on problems relating to all types of trade and industrial education; in others, several committees are in operation, one for each industry or craft represented in the training program.[26] In the large towns and cities, each of the vocational high schools has its own advisory committee, which functions in cooperation with the school principal.

It has been the policy of the Office of Education to encourage the formation of advisory committees with a stable membership that would make a practice of calling on consultants for specialized information. Consultants are drawn, in the main, from such agencies as state and local employment services, the state Department of Labor, or the state office of vocational education.[27] The federal policy favors particularly the designation of a representative of the USES as a consultant for each committee, so that data on the labor market, current training needs, and specific job requirements may be made easily available. It also recommends the appointment of a representative of each craft or occupation to be added to the committees as alternating consultants when the introduction or abolition of courses is under consideration.[28]

The function of the local advisory committees that is closest to the work of education itself, as it proceeds day by day, is to determine the essential occupations and industries in a community

[26] U.S. Office of Education, *Digest of Annual Reports . . . 1940* (Washington, 1941), p. 36.

[27] Ibid. p. 6.

[28] U.S. Office of Education, *Representative Advisory Committees* (cited above), pp. 4-7.

or in a state, the number of workers to be trained, the type of jobs, job specifications, possibilities of training for various jobs from the standpoint of instructors, equipment, and space, and also to select consultants. The state advisory committees have similar functions at a state level, but on the whole their work is of a more administrative nature.

In its conception and organization the policy on advisory committees is laudable. Vocational schools, like all other educational institutions, cannot develop effectively without the support of public opinion, and they can gain this only if they maintain the educational standards established for the nation, and, at the same time, render a substantial service to the national economy by filling the gap in the training needs of the country. There is no way to reach this goal other than through the cooperation, in advisory committees at all levels, between representatives of education and economic forces, for the purpose of attaining practical results as well as promoting the idea of vocational education.

The principles of employer-employee parity and the calling in of experts as consultants are also fundamentally sound. This system promotes consistency in vocational education practice and an understanding on a certain number of basic problems among the members of the advisory boards, without depriving them of the benefit of expert advice from craft, occupation, and labor market consultants. An expansion of in-school vocational education may witness a broadening of the scope of the advisory committees and a further specialization of the services of the consultants. Whereas, until recently, vocational courses centered on a few apprenticeable crafts, with the result that no more than a portion of the manufacturing industries and trades were represented in the advisory committees, a wider cooperation will be sought and found in the future as the vocational education program expands, and eventually advisors and consultants will be taken from the whole realm of the industrial economy. A great segment of the population which hitherto has had little knowledge of in-school vocational education will thus become familiar with a vigorous and promising branch of our secondary education.

VII

Technical Institutes

Development

TECHNICAL institutes, although they antedated technical high schools by many years, have never achieved uniformity of type or increased to a considerable number. Founded or sponsored by individuals with very definite and personal conceptions of what such schools should be, the technical institutes have so long been subjected to these varied influences that they are just now beginning to emerge from the experimental stage. Largely through the efforts of the Society for the Promotion of Engineering Education (SPEE), the term, 'technical institutes,' has recently become standardized and has come to mean a type of institution quite distinct from the technical or vocational high school or trade school.

It is, of course, the possession of certain common features that enables these institutions to be designated as technical institutes in the currently accepted sense of the term With the exception of private trade schools, they are the only institutions of vocational education that are not secondary in character but whose activities involve work on a full-time day basis. But while they do not operate at the secondary level neither are they of college grade, because of the content of their curriculums and the average length of their programs. Inasmuch as they are not considered to prepare for 'trade and industrial pursuits' in the sense of the Smith-Hughes and George-Deen acts, they receive no federal aid. They are either privately or publicly operated, but even in the latter event they are outside the jurisdiction of the public school system. The programs are generally two or three years in length, but may be one or four. Minimum entrance age is from sixteen to eighteen. High school

graduation is frequently required for entrance and is almost always preferred; previous industrial experience is generally not required although usually held desirable.

It is not a new idea that specialized training should be provided for the 'intermediate group' engaged in technical and supervisory occupations at the level between manual pursuits and the professions. It was inherent in the establishment of the mechanics' institutes early in the 1820's, and interest in this type of training increased with the rise in importance of technical occupations in the economy. Yet the number of institutes has remained small. A substantial report on technical institutes made by SPEE in 1928–29,[1] although it did not claim to be exhaustive, listed 34, of which only 9 were designed as 'predominantly technical institutes'; 15 were predominantly degree-granting colleges or universities which included technical courses in their programs; and 10 were 'industrial schools of mixed character.' Full-time day courses were offered by only 19 of the institutes, evening courses by 14, and cooperative half-time day courses by 2.

One of the chief deterrents to the development of the technical institute has been the persistent trend in this country toward engineering college education. As a result of the passage in 1862 of the Morrill Act, which gave a tremendous impetus to American technical education through the establishment of land grant colleges, the existing technical institutes gravitated toward the conventional form of engineering colleges and were gradually reorganized into degree-granting institutions. Once established, the schools of engineering enjoyed greater prestige than the technical institutes and had no interest in encouraging techical institute training since it would have meant a reduction of their own potential student body. Furthermore, parents and students preferred the wider professional opportunities, open to graduates of engineering colleges, to the more limited future for technical institute graduates, even

[1] Society for the Promotion of Engineering Education, *Report of the Investigation of Engineering Education*, 1923–29, vol. 2, Part 2 (Pittsburgh, 1930), pp. 1–271.

when withdrawal from college before completion of the course was a distinct probability.

Contributors to the SPEE report urged expansion of the technical institutes on the grounds that the needs of the economy could scarcely be met by less than 250 such schools. They shared with the National Industrial Conference Board the belief that, in an average year, industry, trade, and technical services could absorb from 40,000 to 50,000 men so trained. At the time the report was made, there were, annually, barely 9,000 graduates of engineering colleges, and probably less than 1,500 from technical institutes of post-secondary grade. If their number has increased meanwhile, so have the number of vocational-technical pursuits for trained workers; thus the need for more schools still exists.

Although technical institutes share the vocational-technical goals and a good part of the scientific and technical content of the training given by technical high schools, they differ considerably from them in many respects. The primary distinctions are that their curriculums are confined to narrower fields of industrial production than those of the technical high school, and that their teaching of applied and practical technical knowledge is concentrated on training rather than on education. The main emphasis is on vocational-technical subjects. The technical subjects take precedence over scientific subjects, and these, in turn, over mathematics. In general, mathematics and science together do not exceed 30 per cent of the entire instruction time; if they attain a higher proportion in the first year, they are accorded less time in the second or third. They are frequently given in the form of applied science, applied chemistry, physical elements of engineering, or the like. General education subjects are usually not included in the programs, or are reduced to a minimum that generally comprises only business English or business correspondence.

Among the more notable technical institutes are Pratt Institute in Brooklyn,[2] the Rochester (N.Y.) Athenaeum and Mechanics

[2] This has become an engineering college, but still offers three-year technical programs of noncollege grade.

Institute, the Ohio Mechanics Institute at Cincinnati, Chicago Technical College, Wentworth Institute in Boston, and Bliss Electrical School in Washington, D.C. The Newark (N.J.) Technical School, and the Lowell Institute School for Industrial Foremen conducted at the Massachusetts Institute of Technology, are evening schools of the same type. All these institutions have made important contributions to vocational-technical training in various fields. Bliss offers a one-year electrical engineering course; Chicago Technical College gives two-year courses in architecture, building construction, and civil, electrical, and mechanical engineering; Rochester Athenaeum has three-year cooperative electrical, mechanical, and chemical courses; Wentworth offers two-year courses in machine construction, electrical construction, power plant, architectural construction, and foundry.

In 1940-41, only three technical institutes with a total enrollment of 929 students offered cooperative courses—Rochester Athenaeum and Mechanics Institute, Ohio Mechanics Institute, and Wyomissing (Pa.) Polytechnic Institute. With three exceptions, all the cooperative curriculums were in engineering, the courses varying in length from two to three years of a relatively low number of weeks of instruction, compared with the number required by degree-granting institutions.[3] In contrast to cooperative programs in the colleges and universities, where the students remain in school full time during the first year,[4] cooperative programs in these technical institutes may be embarked on right at the start.

The nature of the work of technical institutes may be well illustrated by the program of the cooperative course in instrument making given by the Rochester Athenaeum.[5] In the first year the student devotes 4 hours a week to mathematics, 5 to mechanical

[3] Two-year courses at Ohio Mechanics, 38 weeks; 2½-year course at Wyomissing, 50 weeks; 3-year curriculum at Rochester Athenaeum, 57 weeks.

[4] Leo F. Smith, 'Cooperative Work Programs,' in *Journal of Higher Education*, vol. 15, no. 4 (April 1944), pp. 209 ff.

[5] U.S. Office of Education, *Vocational-Technical Training for Industrial Occupations*, Bulletin No. 228 (Washington, 1944), pp. 246-7.

drawing, 12 to machine shop and instrument making, 3 to psychology, 4 to mechanics and heat, and 2 to English and study techniques. The second year's program includes economics for 3 hours a week; drawing and mechanism, 6; electricity, 6; strength and properties of materials, 6; instrument making, 9. Subjects comprising the schedule for the third year are optics and sound for 3 hours a week; instrument and tool design, 9; materials laboratory, 3; instrument making, 9; industrial management, 3; and technical projects, 3.

Another typical program is the two-year course in steam and Diesel engineering given at the Wentworth Institute.[6] In the first year a total of 200 school work hours and 235 home study hours are spent on applied science (statics, kinetics, applied heat); 240 and 140, respectively, on steam and Diesel engines (construction and operation); 200 and 235 on electricity (direct current machinery); 190 and 0 on mechanical drawing; 120 and 150 on mathematics (application of arithmetic, algebra, and trigonometry); 90 and 0 on welding (oxyacetylene and arc welding); 30 and 40 on English (letter writing and technical reports). The distribution of total school work and home study hours for the second year is as follows: 360 and 250 for steam and Diesel engines (operation and testing of engines and auxiliaries; water, fuel, oil, and gas analysis); 180 and 175 for electricity (alternating current machinery); 75 and 95 for applied mechanics and testing of materials; 30 and 40 for English (letter writing, technical reports, public speaking); 180 and 50 for machine shop; 175 and 25 for mechanical drawing; 45 and 50 for mathematics (advanced work in algebra and trigonometry).

Junior College Role

In recent years, courses similar to those given in technical institutes have begun to appear in the curriculums of junior colleges. This is not an illogical result of junior college development, especially in the southern and western sections of the country, but

[6] Ibid. pp. 246–7.

whether it is a trend to be encouraged remains to be demonstrated.

Junior colleges operate either as an undergraduate division of college or as a terminal institution, in both cases on a two-year basis. In the former capacity they are closely linked with collegiate institutions; in the latter they appear rather as an extension of high school contributing to the never-ending effort to prolong the school attendance of American youth. A few junior colleges give additional emphasis to this orientation by offering a four-year program extending from the 11th through the 14th grade, or, in other words, from the third year of high school through the second of college. In several junior colleges, the two-year course leads to the degree of Associate of Arts or some similarly named degree, this trend of conferring degrees on junior college graduates appears to be spreading.[7]

Even in their terminal courses junior colleges tended to adjust their work to that of the first two college years. No noticeable change occurred until, with the expansion of vocational education and training, two-year courses of a vocational character penetrated the junior college programs. In 1940-41, approximately 34 per cent of all junior college training in the United States was terminal in nature, and the 'vocationalization' of the program was well under way.[8] In California, for example, the Los Angeles Junior College has for several years been offering numerous semiprofessional courses of study; similar offerings are reported by Pasadena Junior College and Sacramento Junior College.

As the terminal education function gained more importance, junior colleges also entered the field of vocational-technical training or, to use a term frequently found in the junior college literature, 'technical institute training.' Most examples of this kind of training

[7] Raymond E. Davis, 'Function of the Junior College in Engineering Education,' in *Journal of Engineering Education* (February 1933), pp. 429-37, Arthur G. Gehrig, 'Technical Courses at Pasadena,' ibid. pp. 458-62.

[8] Howard A. Campion, 'Vocational Programs in Junior Colleges,' in National Society for the Study of Education, *Yearbook*, No. 42, Part 1: *Vocational Education* (Chicago, 1943), pp 407 ff.; American Association of Junior Colleges, *Present Status of Junior College Terminal Education* (Washington, D.C., 1941), p. 24.

are found in the West, where it developed out of the special educational needs of the region. Inasmuch as the technical institute, on the other hand, is the result of training needs of the industrial areas east of the Mississippi and north of the Ohio and Potomac rivers, the work of the two types of institutions shows no regional overlapping.

Despite this extension of activity, it would be an error to overestimate junior college terminal technical training. Numerically, the findings are not impressive. A study based on the curriculums of 270 junior colleges in 1930–31 reported only 21 terminal technical courses.[9] And according to one of the recent studies of the Commission on Junior College Terminal Education, fewer than 3,500 students were enrolled in strictly vocational-technical courses in the 293 junior colleges investigated.[10]

Furthermore, for a long time, the curriculum of the technical courses in the junior colleges differed greatly from those of the traditional technical institutes.[11] Subjects that bore no direct relation to technical fields—for example, English, speech, social science, humanities, or physical education—were accorded from 12 to 15 per cent of instruction time by junior colleges, whereas in technical institutes they were omitted entirely or, at best, were given only slight attention. Moreover, in junior college terminal technical education, mathematics, physics, and chemistry occupied about 50 per cent of the instruction time, while in technical institutes, where the technical subjects are the center of instruction, they account for no more than about 30 per cent.

It is obvious, therefore, that for the most part the junior college approach to technical training has had a closer relationship to that of the technical high school, or to the first two years of engineering college, than to that of technical institutes. This is under-

[9] Arthur W. Leighton, 'Technical and Engineering Education,' in *Junior College Journal* (December 1934), pp. 113–20.

[10] U.S. Office of Education, *Vocational-Technical Training* . . . (cited above), p. 189.

[11] Ibid. p. 181; Campion, op. cit. p. 407; Clyde C. Colvert, *The Public Junior College Curriculum* (Baton Rouge, La., 1939), pp 99–114.

standable in view of the fact that the technical institute grew out of economic, and the junior college out of educational, needs. Technical institute training, therefore, has been determined far more by immediate practical considerations than has that of the junior college.

This situation may explain the lack of enthusiasm for junior college terminal technical training on the part of representatives of the engineering professions, and on the part of the ardent proponents of the technical institutes. At the time of its extensive investigation (1928–29), SPEE was unable to find any basis in experience for expecting the junior college to do successfully the work of the technical institute. Weighing its origin and real goal, the report considered the junior college an extension of secondary education, and deemed this essentially secondary environment unfavorable to the task of the technical institute. It asserted further that 'even in the so-called technical junior colleges, the only courses offered are the precise duplicate of the first two years of the university courses.'

Developments in the junior college subsequent to the publication of the SPEE report have given rise to no reversal of such unfavorable opinion, though there have been no other equally harsh judgments of this kind. Competent observers continued to feel dissatisfied.[12] Robert Hoover Spahr, one of the authors of the SPEE report, although he did not maintain the earlier completely negative attitude of the report toward junior college participation in technical education, reserved final judgment with the statement that 'time will tell the results of their rather interesting and voluminous efforts in this area of education.'

Recently, however, bolder steps in the direction of genuine technical institute training have been taken by some of the junior colleges, especially those in California, the state that has shown most enterprise in the junior college movement. With the impetus of the war emergency, junior colleges that specialized in two-year

[12] F. Theodore Struck, *Vocational Education for a Changing World* (New York, 1945), p. 486.

engineering courses gave them a more definitely technical institute character; others, like the one in Bakersfield and that in Meridian, Mississippi, added courses of this kind to their programs. The California colleges were largely instrumental in providing vocational-technical training for the aircraft industry, 60 per cent of which was located in that state.[18]

Curriculums took a more practical turn. Thus, Pasadena Junior College offered 13th- and 14th-year students a course in aviation technology comprising the following subjects: aeronautical welding; aeronautical woodshop; aeronautical machine shop; aeronautical drafting; descriptive geometry; aeronautical laboratory; technical reports; technical mathematics; aircraft design, drafting and construction; material testing laboratory; strength of materials; industrial organization; metal aircraft construction; aeronautical mathematics, physical education or Reserve Officers Training Corps. This is a purely technical institute curriculum in which the college curriculum features have been almost wholly abandoned in favor of highly concentrated technical training, with additional emphasis on related subjects; cultural subjects are entirely eliminated. Such a curriculum presupposes a teaching staff that should not be lacking in scholastic background but that cannot fulfill its task without substantial occupational experience—a far cry from the usual faculty in the junior college. The problem of teachers and teacher training is by no means the least barrier to the kind of terminal technical training in junior colleges that would yield satisfactory returns in terms of well-prepared technicians.

New York State Projects

A third type of institution that would provide proper training for intermediate technical and supervisory positions is suggested by the recently outlined New York State project for such education. This follows a middle road between the older, established technical institutes and the so-called technical institute training of the junior colleges. New York's interest in vocational-technical

[18] Campion, op. cit. pp. 415–20.

training on a post-high school level was first reaffirmed in 1937, when two-year technical courses were added to several schools that had been established some forty years before in rural areas for training in agriculture and home economics. But by including general education subjects and stressing mathematics and science, the curriculums of these institutions more closely approached those of the junior colleges than those of the traditional technical institutes.

Six years later, comprehensive planning crystallized in what is popularly known as the Strayer report.[14] In this plan, for the first time, business, industrial, and technical institutes were expressly mentioned as a special group within the instructional services to be established by an organization for vocational education. Since business and industry need workers with more technical knowledge than that possessed by workers on trade levels, institutes of this kind, offering one- or two-year courses to supplement and extend the practical courses given in high school, were suggested as being of value to both employers and workers.

The New York plan was presented as applicable to other large cities as well. 'When the pressure from students who seek admission becomes great, as is likely when the present war emergency period ceases, such schools may find it advisable to eliminate the present tenth school year and offer four years of work beginning with what is now the junior year of the secondary school period. There is a place for business and technical institutes in large American cities as part of an extended secondary school program.'[15]

The report suggests courses varying in content and length according to special fields, and includes in its recommendations 'that the educational offerings of the technical and the central vocational high schools be extended to a thirteenth and a fourteenth

[14] State of New York, Legislative Document (1944) No. 60, *Report of the New York City Sub-Committee of the Joint Legislative Committee on the State Education System* (Albany, 1944), Appendix 1: Report of the Survey of the Schools under the Control of the Board of Education, City of New York, pp. 311, 315-6, 319, 325, 334.

[15] Ibid. pp. 315-6.

year to include business, industrial and technical institutes related to the fields in which these schools now function on the secondary level—administration to remain for the present in the districts where these schools are now located.'[16] This implies a coordination with the work of the vocational and technical high schools and, in line with the organization of these schools, close cooperation between the schools, management, and labor—an interesting feature of the new planning that will foster the success of the technical institutes. Students of these institutes would be recruited not from among persons with work experience in industry, but from high school students whose shop experience, if any, would be confined to that acquired in vocational high school workshops.

The State of New York plans the establishment of 21 technical institutes, eleven of which are slated for New York City, while the other five are to serve Syracuse, Utica, Buffalo, Rochester, Albany, and other towns. Courses are to be two years in length. No degrees are to be offered, but certificates will attest to the completion of the work by the students.

When this plan was published early in 1945, New York City had already established the Fashion Institute of Technology and Design, the first technical institute of its type in the state, incorporated under a charter granted by the Board of Regents, and designed to serve as a model for other institutes to be established later. The Fashion Institute is the joint creation of the Educational Foundation for the Apparel Industry, established by leaders of management and labor, and the Board of Education of the City of New York. The close cooperation between educational authorities, management, and labor, in the establishment of the Fashion Institute, is further emphasized by the fact that management and labor leaders proceeded under the guidance of the chairman of the Needlecraft Educational Commission. This Commission acts as an advisory board to the Central High School of Needle Trades with which the Institute is administratively connected.

The Board of Education supplies the facilities for instruction

[16] Ibid. p 334.

and a nucleus of the teaching staff; the Foundation supplies special materials for instruction, visiting lecturers, and 100 scholarships a year valued at $400 each for talented high school graduates from any high school in the United States.[17] The first graduates of the Institute were transferred into industry in the spring of 1946.

The Fashion Institute offers two major courses—one in the field of fashion, the other in industrial scientific management—and gives the students in either course a limited amount of instruction in the other. Of the 25 class units required in each of the four terms, 13 refer to the central subjects proper: apparel construction and design in the fashion course; and in management, a general course and laboratory work in scientific management, plus some units in elementary accounting, industrial cost accounting, marketing and quality control. The remaining 12 units are divided among the related technical subjects, and the cultural and academic subjects.

The related technical subjects in the field of fashion, distributed over four terms, are textile design, millinery design, applied textiles, textile testing, elementary accounting, industrial cost accounting, industrial scientific management, marketing, and quality control. The cultural and academic subjects are history of costume, industrial psychology, labor relations, contemporary literature, personality development through effective speech (oral report technique), advertising copy, human relationships (sociology), and world civilization. Report techniques, typewriting, and workshop experience are included in the curriculum as tool subjects, and 4 units distributed over two terms are devoted to leadership training. In addition to the 25 class units, 34 units of outside preparation, covering the same subjects, are required each term. Save for minor differences, the cultural and academic subjects in the curriculum for industrial scientific management are the same as in the fashion course. Related technical subjects of the management curriculum include poster, applied textiles and textile testing (these

[17] Mortimer C. Ritter, 'Fashion Institute of Technology and Design,' in *Occupations* (May 1945), pp. 457-9; Fashion Institute of Technology and Design, *First Annual Report* 1944-1945 (New York, 1945), p. 5.

two identical with offerings in the other course), mathematics, and art.

The breadth of the academic subjects, which cover about the same amount of time as the related technical subjects in the fashion course but more time in the management course, is remarkable.[18] So, too, is the inclusion of labor relations, not found as a separate subject in the vocational high school curriculums. The multiplicity of the academic subjects, however, implies that most are taught in two weekly periods during only one or, at best, two terms, and that the instruction is more suggestive than informational.

Among similar institutions planned for other industries, the technical institute for printing deserves special mention. In New York City the Graphic Arts Educational Commission, consisting of the representatives of education, of organized labor, and of employers in the graphic arts, is busily engaged in studying the problem of education and training for the printing trades, and the chairman of the commission has drawn up the following plan: a three-year vocational high school course, after junior high school, giving pre-apprentice training; a two-year technical institute for advanced training for junior positions in management, in production, and in shop; a four- to six-year school for apprenticeship training; a school for journeyman training; a professional and college technical institute for training potential teachers on a college level; a post-graduate school for management and upgrading training.[19] The two-year technical institute will be organized as a separate unit of the New York School of Printing and is designed to train for junior executive positions, such as assistant production manager, assistant estimator, job and billing clerk, assistant purchasing agent, and inventory clerk. The plan, as a whole, is outstanding, in that it covers all phases and aspects of vocational education and training, combines in-school and in-employment training, and integrates vocational high school and technical institute training with apprenticeship and journeyman training.

[18] Fashion Institute of Technology and Design, *Second Annual Report*, 4 June 1946 (New York, 1946), p. 10.

[19] William H. Friedman, *Post-war Education for the Printing Industry* (New York, 1945).

VIII

Statistical Survey of Vocational Education and Training

Enrollments

As may be seen in Table 6, enrollments in vocational schools and classes showed a steady rise from a total of 164,186 in 1918 to a peak of 2,624,786 in 1942. The first important setback came in the following year when total enrollments fell off by 326,698, a decline directly attributable to wartime conditions. The early years of the war made no perceptible difference, but by 1943 many vocational teachers and members of the student body had been drafted into the armed services, others had entered war industries, and still others were finding it impossible to attend part-time and evening classes because of overtime work.

An enrollment of more than 2 million in vocational schools is admittedly impressive. Analysis of the composition of this vast group, however, reveals that, contrary to popular opinion, it is not the all-day classes but rather the part-time courses that attract most of the students and for which the major part of federal support is used. In 1942 the combined enrollments in the part-time and evening classes were 1,427,573 or 54.4 per cent of all enrollments in vocational classes. Enrollments in trade and industrial part-time and evening classes (including continuation classes) were 553,146, almost double the number in all-day trade and industrial classes. These figures indicate plainly how many persons beyond high school age feel the need for additional occupational training.

All-day vocational high school enrollments, with which this study is mainly concerned, numbered 1,197,213 in 1942, or 45.6

per cent of the total. But this figure in no way suggests how small an amount of vocational education and training was offered at the secondary level in agriculture, the trades, and industry, since about 50 per cent of the all-day enrollments were in home economics classes. In 1942, the peak year, enrollments in trade and industrial all-day classes were 297,451, or only 4.1 per cent of the total high school population, a proportion that in no way reflects the great

TABLE 6. ENROLLMENTS IN FEDERALLY AIDED ALL-DAY VOCATIONAL HIGH SCHOOLS AND PART-TIME AND EVENING CLASSES, 1918–43 [a]
(in thousands)

Type of Class	*1918*	*1924*	*1930*	*1934*	*1938*	*1942*	*1943*
All-day Vocational High Schools							
Trade & industrial	18.6	33.3	71.4	123.5	184.2	297.4	196.4
Agriculture	15.5	65.4	113.7	164.9	246.2	332.9	286.2
Home economics	8.4	36.3	56.4	142.5	358.0	566.8	542.9
Total	42.5	135.0	241.5	430.9	788.4	1,197.1	1,025.5
Part-time and Evening Classes							
Trade & industrial	99.3	120.4	210.9	168.9	346.9	447.4	312.1
Agriculture [b]	—	20.7	74.7	121.2	214.7	272.2	205.7
Home economics	22.4	120.5	118.6	155.4	269.4	387.2	330.8
Distributive	—	—	—	—	36.0 [c]	215.0	313.9
Continuation	[d]	256.1	336.3	174.6	154.7	105.8	109.9
Total	121.7	517.7	740.5	620.1	1,021.7	1,427.6	1,272.4
GRAND TOTAL	164.2	652.6	981.9	1,051.0	1,810.1	2,624.8	2,298.1

[a] Computed from U.S. Office of Education, *Digest of Annual Reports of State Boards for Vocational Education* . . . 1943 (Washington, 1944), Table 5, p. 80.
[b] Including day-unit classes.
[c] Organized in 1937 on the basis of the George-Deen Act.
[d] Included by official statistics in part-time classes; first separate listing, which appeared in 1920, put enrollment at 98,082.

importance of manufacturing, construction, mining, and transportation in the national economy. But the rapid increase in enrollments in these courses between 1930 and 1942, when compared with the

increase in general high school enrollments,[1] is decidedly impressive. In 1930, only 1.5 per cent of all high school enrollments were in trade and industrial classes; since then the percentage has almost tripled.

The distribution of enrollments in trade and industrial classes among evening, part-time trade extension, and all-day courses for the 1926–42 period is shown by the following figures (expressed in thousands).[2] Enrollments in all-day classes have shown a steady

	Evening	*Part-time trade ext.*	*All-day*
1926	89.7	41.8	44.8
1928	114.6	42.5	57.4
1930	165.3	45.6	71.4
1932	151.0	44.5	93.4
1934	130.9	38.0	123.5
1936	120.2	125.9	145.6
1938	163.3	183.6	184.2
1940	167.9	241.1	206.9
1942	85.2	349.0	297.5
1945	70.2	151.5	174.5

growth. In the main, they have paralleled educational and economic trends, increasing in proportion to the growth of the entire high school population and faster than that of the general high school. The greatest proportional increases occurred between 1930 and 1934, the worst years of the depression. Obviously, unfavorable labor conditions affect high school attendance favorably.

The other types of classes, in contrast, follow exclusively economic lines and in quite a different way. The economic depression of the thirties disrupted the development of evening and part-time class enrollments as the decline in employment decreased the de-

[1] See Ch. III, p. 56.

[2] Computed from U.S. Office of Education, *Digest of Annual Reports of State Boards for Vocational Education* . . . 1943 (Washington, 1944), Table 5, p. 80, and *Statistical Abstract of the United States*, 1946, p. 141. The 1942 figure for part-time trade extension classes excludes part-time cooperative classes.

mand for adult vocational training The sharp decrease in evening class enrollments in 1942, which preceded the general decline of 1943, may be accounted for by the lengthening of the working day for the group which this kind of training chiefly served.

Regional Distribution

A survey of 1942 enrollments in federally aided trade and industrial classes by regions, as shown in the following figures,[3] reveals their predominance in the industrial North Atlantic area with a total of 44 per cent in this section and the other 56 per cent more or

	All classes	*All-day classes*
North Atlantic	378,354	211,379
Southern	165,875	26,669
Central	163,645	34,455
Pacific	139,169	23,357
Hawaii	2,177	857
Puerto Rico	1,377	734
Total	850,597	297,451

less equally distributed over the South, Central, and Pacific areas. In all-day classes alone, enrollments in the North Atlantic region accounted for 71 per cent, with percentages in other regions ranging from 12 to 8. In part-time and evening classes the regional variation was less pronounced. There were 115,997 enrollments in part-time trade extension or trade preparatory classes in the Atlantic region, and 83,942 in the South, the next highest on the list; 29,291 enrollments in evening classes in the Atlantic region were followed fairly closely by 25,623 in the Central area.[4]

The ten states with the highest enrollments in all-day trade and industrial classes in 1943 were New York with 60,113, Pennsylvania with 19,579, Massachusetts with 14,524, California with 12,-120, Illinois with 8,407, Texas with 8,181, New Jersey with 6,078, Ohio with 5,842, Michigan with 5,751, and Connecticut with

[3] U.S. Office of Education, *Digest of Annual Reports . . . 1942* (Washington, 1943), p. 22.

[4] Ibid. p. 22.

4,457.[5] It is not surprising that these are almost all highly industrialized states; five are in the North Atlantic region, three in the Middle West, one each in the Far West and the Southwest. With the exception of Texas, which only recently has gained a ranking position in trade and industrial education, more than 65 per cent of the population of each of these states is concentrated in urban centers.

In the following figures a relationship is established between population, urban concentration, and trade and industrial high school attendance, with a view to measuring the extent of trade and industrial education in the ten states cited above.[6] New York

	Population in millions	*% Concentration in urban areas*	*Enrollments in all-day trade & indus. classes*	*Enrollments per 1,000 population*
New York	13.5	82.8%	60,113	4.5
Pennsylvania	9.9	66.5	19,579	2.0
Massachusetts	4.3	89.4	14,524	3.4
California	6.9	71.0	12,120	1.8
Illinois	7.9	73.6	8,407	1.1
Texas	6.4	45.4	8,181	1.3
New Jersey	4.2	81.6	6,078	1.4
Ohio	6.9	66.8	5,842	0.8
Michigan	5.3	65.7	5,751	1.1
Connecticut	1.7	67.8	4,457	2.6

ranks first as a result of the progressive policy pursued by both the state and New York City with regard to vocational education. Two New England states, Massachusetts and Connecticut, come next with regard to the ratio of enrollments to population. Of the other ten states only Pennsylvania has a ratio as high as 2 per 1,000.

Conversely, it is the South and West that have taken the lead in agricultural all-day classes. Of the ten states showing the highest enrollments, four are in the South, four in the Middle West, one in the Southwest, and one in the Atlantic area. The figures are as

[5] Figures for individual states were not published for 1942.

[6] U.S. Office of Education, *Digest of Annual Reports* . . . 1943 (cited above), Table 5, p. 80, *Statistical Abstract* . . . 1946 (cited above), p. 15.

follows: Texas, 28,907; North Carolina, 18,523; Georgia, 14,761; Illinois, 12,299; Wisconsin, 11,589; Tennessee, 11,354; Ohio, 11,190; Indiana, 11,131; Pennsylvania, 11,103; Louisiana, 10,130.[7]

Enrollments in home economics all-day classes (97 per cent of enrollees are girls) generally paralleled those in agricultural education. Texas, Georgia, North Carolina, and Illinois, which had the highest enrollments in agricultural all-day classes, also had the highest enrollments in home economics classes with 54,030, 31,207, 29,173, and 22,893 respectively. On the other hand, home economics classes were poorly organized and attended in such states as New Jersey (2,030) and Connecticut (2,200), which explains why few industrial states rank among those with high total enrollments in all-day vocational classes.

As shown by the following figures on population, total enrollments in vocational all-day classes, and enrollments in agricultural, trade, and industrial, and home economics classes, in the ten states with the highest total enrollments in 1943,[8] Pennsylvania, Illinois, Texas, and Ohio rank high in all groups, indicating thereby a pronounced policy in favor of all branches of vocational education.

	Population in millions	*Total enroll-ments*	*Agri-cultural enroll-ments*	*Trade & indus. enroll-ments*	*Home econ. enroll-ments*
Texas	6.4	91,118	28,907	8,181	54,030
New York	13.5	81,864	9,164	60,113	12,587
Pennsylvania	9.9	49,196	10,328	19,579	19,289
Georgia	3.1	45,468	13,100	1,161	31,207
N. Carolina	3.6	44,051	12,775	2,103	29,173
Illinois	7.9	43,599	12,299	8,407	22,893
Ohio	6.9	35,976	10,523	5,842	19,611
Indiana	3.4	35,145	10,675	2,558	21,912
Virginia	2.7	33,151	7,948	2,437	22,766
Louisiana	2.4	33,842	9,700	3,603	20,539

[7] U.S. Office of Education, *Digest of Annual Reports . . .* 1943 (cited above), Table 5, p. 80.

[8] Ibid. Table 5, p. 80; *Statistical Abstract . . .* 1946 (cited above), p. 15.

The figures for New York, Massachusetts, and Connecticut reflect marked interest in trade and industrial all-day classes.

TRADES AND COURSES

In the 3,202 trade and industrial courses listed by the Vocational Division of the United States Office of Education in 1940, 109 trades were being taught.[9] Inasmuch as no new breakdown has since been published, the figures for that year will have to serve as a basis for discussion.

The number of trades, courses, and enrollments in each of seven large trade groups may be seen in the following tabulation. The largest number of courses were in the machine and metal trades and the closely allied auto mechanics, aviation, and electrical group, these together accounting for almost half of all the courses. Construction and woodworking trades are also represented by a large number of courses. Some of the large groups, however, included components of other groups, which makes it advisable to interpret the figures with caution.[10]

	Trades	*Courses*	*Enrollments*
Machine, metal & related trades	20	833	56,883
Auto mech., aviation, elec.	19	740	64,928
Constr. & woodworking	17	823	29,500
Food trades & serv. occupations	20	260	18,000
Textiles & clothing	13	218	30,000
Printing & related artistic trades	12	307	16,200
Chem., tech., misc.	8	21	2,500

[9] U.S. Office of Education, *Directory of Federally Aided All-Day Trade and Industrial Education Programs* (Washington, 1940), pp. I–III. The number of courses shows the frequency of the different trades in the vocational high school programs throughout the country. If two or more classes in the same trade are enumerated within a single school, they are counted as one course.

[10] For example, all drafting is lumped together with the machine and metal trades, although some of the courses or part of them may be given in connection with architecture, construction, and woodworking; the same is true of the general vocational courses, industrial design, and others. Furthermore, some of the maintenance and repair courses, which are usually identified with the service occupations, are counted among the machine and metal trades because a knowledge of these trades is considered prerequisite to maintenance and repair.

Within the seven large trade groups, the separate trades appearing most frequently in vocational high school curriculums are auto mechanics (359 courses), machine shop (301), electricity (252), carpentry (227), and printing (214). All these courses are in recognized apprenticeable trades and offer all-round basic training along trade unit lines. The predominance of apprenticeable trades is due to tradition and also to the fact that their broad scope affords a solid basis for technical and operational knowledge, which can later be effectively integrated with any specialized job or occupation.

The problem of expanding trade education has recently been approached by the introduction of courses either in more specialized, artistic, or technical trades, or in the service occupations. Among the former, for example, are special courses in machine design, ornamental design, showcard writing and design, oil production and refining, and industrial chemistry. Exploration and penetration into new fields is an important development, in view of the need to extend the vocational courses according to the diversified demands of the labor market.

Statistically, enrollments and courses have not traced the same pattern. The highest enrollments were in auto mechanics, aviation, and electricity courses, trades that ranked third in the tabulation of number of courses. Machine, metal, and related trades, which had the largest number of courses, had the second highest enrollments, while textile and clothing groups, which were sixth in regard to number of courses, held third place in enrollments. The explanation lies in the fact that the textile and clothing vocational high schools are large trade unit schools concentrated in a few big cities, while metal trade and mechanics schools and classes are widely distributed over the country and many of them have relatively few students. This is even more true of the 823 construction and woodworking courses in which only 29,500 students were enrolled.

The distribution of students among the separate trades in each of six large groups, the number of courses given, and the number of

states in which they were found are shown in the figures that follow.[11]

Auto mechanics ranked first, with women's garment work and electricity next in order; these three trades were the only ones in

	Total enroll-ments	*No. of courses*	*No. of states*
Machine, metal & related trades			
Drafting	5,929	139	26
General industrial—metal	8,820	58	26
General vocational	16,126	99	14
Machine shop	16,748	301	40
Sheet metal	3,240	84	26
Welding	2,379	51	21
Auto mechanic, aviation, electricity			
Auto mechanics	26,929	359	45
Aviation	8,520	40	20
Electricity	20,487	252	40
Radio	2,442	32	18
Construction & woodworking			
Cabinetmaking	4,496	157	27
Carpentry	5,212	227	38
General industrial—building	6,537	166	30
Plumbing	1,983	47	16
Woodworking	7,268	81	21
Food trades & service occupations			
Food trades	6,581	82	25
Cosmetology	6,266	83	25
Household service	1,076	24	10
Textiles & clothing			
Garment & needlework trades, women's	23,471	100	32
Millinery	2,541	21	11
Printing & related trades			
Commercial art	3,450	54	21
Printing	12,634	214	40

[11] Enrollments computed from U.S. Office of Education, *Digest of Annual Reports* . . . 1940 (Washington, 1941), Table 9, p. 30; data on courses computed from U.S. Office of Education, *Directory* . . . (cited above), pp. I–III.

which more than 20,000 students were enrolled. In machine shop trades only 16,748 students were enumerated; to these must be added, however, many who were listed as enrolled in general industrial vocational classes. Moreover, sheet metal work and welding, and also auto mechanics, are closely allied to machine shop work; total training in this field therefore was undoubtedly greater than indicated by the number of machine shop enrollments. The only other trades with enrollments of more than 1,000 each were patternmaking, marine engine mechanics (given only in one school), painting, paperhanging and woodworking, shoemaking and shoe repairing, men's garment trades, and janitor service.

Of the 218,000 enrollments in trade and industrial classes about 46,000 were female; half of these were in the ladies' garment trades, the other half distributed among cosmetology (6,164), household arts (944), food trades (4,810), general vocational (4,487), millinery (2,541), and such fields as nursing, costume design, interior decorating, and laundering. Even before 1940, the infiltration of women into the occupations traditionally held by men was felt, although only to a very slight degree.

The 3,202 courses were given in 1,089 schools located in 827 cities. The distribution of these courses among the trades, total enrollments in each group of courses, the number of states in which they were offered and the states giving the highest number of courses in each group may be seen in the following figures.[12] Sixteen trades dominated secondary trade and industrial education, accounting for 75 per cent of the courses and 80 per cent of the enrollments, while the remaining 25 and 20 per cent respectively were distributed among the other 93 trades. General vocational education for work in several trades was most frequent in Massachusetts.

That the number of courses and enrollments often followed divergent lines is proved again by the following figures. For instance, two woodworking trades—cabinetmaking and carpentry—were reported as being offered in 384 courses with only 9,708 enroll-

[12] Computed from U.S. Office of Education, *Directory* . . . (cited above), pp. I–III.

	No. of courses	Total enroll-ments	No. of states	State giving most courses
Auto mechanics	359	26,929	45	Calif. (50)
Machine shop	301	16,748	40	Pa. (46)
Electricity	252	20,487	40	Pa. (42)
Printing	214	12,634	40	Calif. (27)
Carpentry	227	5,212	38	La. (24)
Garment & needlework (women's)	100	23,471	32	N.Y. (16)
Gen. indus.—bldg.	166	6,537	30	Ill. (26)
Cabinetmaking	157	4,496	27	Pa. (24)
Drafting	139	5,929	26	Pa. (25)
Gen. indus.—metal	58	8,820	26	Okla. (8)
Sheet metal	84	3,240	26	N.Y. (15)
Food trades	82	6,581	25	N.Y. (12)
Welding	51	2,379	21	Calif. (10)
Woodworking	81	7,268	21	N.Y. (14)
Commercial art	54	3,450	21	Ill. (10)
Aviation	40	8,520	20	Calif. (11)
TOTAL	2,365	165,701		

ments. Both trades are typical of the one-school small community. Aviation, on the other hand, with a not much smaller number of enrollments (8,520), was offered in only 40 courses, or hardly more than one-tenth of the number of courses given in cabinet-making and carpentry.

Specific industries often determine the trades taught in local vocational schools. Thus, the only school for glovemaking is in Gloversville, N.Y., the center of the glove industry; six of the fourteen textile vocational high schools are in the weaving centers of South Carolina; and the largest needle trades school is in New York City.

RELATION OF TRAINING TO INDUSTRIAL NEEDS

To date, the role of the vocational high schools in supplying the labor force with trained workers has been much smaller than commonly supposed. While this qualification applies to all the major fields in the province of vocational high schools, it is particularly

true of the trade and industrial classes. In 1940, the high school population was approximately 7.1 million—6.1 million in general high schools, and 1 million, or 14.1 per cent, in vocational high schools. But the proportion of the labor force engaged in the craft trades and as farmers, operatives, or other manual workers was no less than 68.2 per cent of the gainfully occupied population (70 per cent, if the 500,000 listed as foremen in the technical trades are included). This disparity is even more striking if the figures for only the male students and male gainfully occupied are compared. About 73 per cent of the gainfully employed male population were in the categories under discussion, while less than 14 per cent of the male high school population were enrolled in vocational high schools with a view to preparing for work in these specific fields.

If one compares the enrollments in all-day trade and industrial classes with the number of persons employed in craft trades only, the percentage of enrollments (less than 3) is still far below the percentage of craftsmen in relation to all gainfully occupied persons (11.8, to which may be added 1 per cent for foremen). And if one considers that many of the courses in which these students are enrolled also prepare for occupations in which operatives play a large role, such as those in the garment trades, the inadequacy of the number of trainees for craft trades becomes even more obvious.

The disparity shows up even more clearly in the following figures (expressed in thousands) on enrollments in some of the most frequently taught trades in the vocational high schools and on the number of gainfully occupied in these trades.[13]

Assuming an average tenure of 28 years in an occupation, the annual replacement rate would have to be 3.6 per cent. Assuming also three and a half years as the average term for students preparing for a trade in vocational high school (some entering in the 9th grade, others in the 10th), the number of enrollments should repre-

[13] Enrollments computed from U.S. Office of Education, *Digest of Annual Reports . . . 1940* (cited above), Table 9, p. 30; figures on gainfully occupied computed from Sixteenth Census of the United States, 1940, Population, vol. 3, *The Labor Force*, Part I, U.S. Summary (Washington, 1943), Table 58.

sent about 12.6 per cent of the gainfully occupied in the respective trades. From the figures below it can be seen that the actual percentages were far below this level even in those trades that were most popular in vocational high schools.

	Vocational h.s. enrollments	*Gainfully occupied*	*Enrollments in % of gainfully occupied*
Electricity	20.5	252.9	8.1%
Sheet metal	4.0	91.6	4.4
Machinists	16.7	521.1	3.2
Mechanics	27.1	949.7	2.9
Plumbing	2.0	216.1	1.0
Foundry	.5	87.6	0.6
Tool & diemakers	.2	96.9	0.2
Forging	.1	87.2	0.1

In the machine and metal industry, all craftsmen, operatives, and persons in occupations such as those of locomotive engineers (excluding foremen and managers of small plants as well as laborers) totaled 4.2 million. The total enrollment, however, in all courses aiming at preparation for these occupations was approximately 121,000 or only 2.9 per cent of those employed.

Figures on some of the building and woodworking trades, as given below (in thousands), reveal an even greater difference.[14]

	Vocational h.s. enrollments	*Gainfully occupied*	*Enrollments in % of gainfully occupied*
Carpentry	5.2	773.6	0.7%
Cabinetmaking	4.5	58.8	7.7
Bricklaying	.9 }	141.7	0.9
Masonry	.4 }		
Plastering	.2	52.9	0.4
Painting	1.4	350.3	0.3

In most cases the ratios do not reach even 1 per cent. They are so low that with the exception of cabinetmaking it can hardly be said that the vocational high schools have played any measurable part in the preparation for these trades.

In the printing trades, where the number of craftsmen was 241,-

[14] Data computed from sources cited in note 13.

000, only 12,634 or 5.2 per cent were enrolled in vocational courses. This figure represents a better proportion than exists in the trades mentioned above, but is still far below the desirable minimum of 12.6 per cent.

On the whole, therefore, the results confirm the extent to which vocational education will have to be expanded even if only to prepare for the predominant craft trades, and for foremanship and small shop management, not to speak of the great number of semi-skilled occupations.

IX

Informal In-Employment Training

IN-EMPLOYMENT training, varied as it is, has the single common feature that it is training given within the framework of employment. It may well be divided into two main groups—apprentice training, and the far more prevalent informal training on the job. The essential difference between the two systems lies in the fact that the apprentice holds his job for the purpose of obtaining systematic training over an unbroken period of years, while the other trainee holds his job for the job's sake, to which learning is only incidental.

Prevailing Types

In contrast to the more or less standardized working schedules for apprentices, to be discussed in subsequent chapters, the usual training on the job includes a great many different procedures through which the trainee may progress in almost any imaginable fashion. To date, the most purposive and systematic training of this kind is that which is given a new operative in the large mass production industries. The worker is assumed not to know the job that lies ahead of him and is therefore taught the few operations he is to perform. In plants where the work is broken down into extremely narrow operations, the actual teaching may take only a few minutes, but the new worker will usually require a certain extended period of time before he is capable of performing his particular job continuously, evenly, and with sufficient speed and accuracy. If the work cannot be taught so quickly, or if it requires the handling of more expensive machinery, tools, or materials, the future operative may even receive pre-assignment instruction in a

special section of the factory—that is, training given in so-called vestibule schools after the worker has been hired but before he is given actual productive work. The time spent by a new worker on pre-assignment training is usually brief, ranging from one to fourteen days, and in most cases it has to be supplemented by some additional instruction directly on the job.

Such off-the-job training assumed considerable proportions at the beginning of the war when all industry became acutely aware of training problems. Large firms even added training directors and special trainers to their staffs to handle this particular problem. A similar form of vestibule school training had been utilized during World War I but was abandoned soon after. In 1937 when the National Industrial Conference Board made its survey of industrial training, only 8.5 per cent of the firms replying to the questionnaire reported that they had vestibule schools, though 80 per cent claimed to give some sort of systematic training.

Another exceptional form of in-employment training was that developed during the last war through the cooperation of the vocational high schools, war industries, and the federal government, whereby the high schools employed their facilities for short-term training on a large scale, in accordance with the immediate needs of local plants. In many cases, workers were hired and put on the payroll while they were still receiving training in the vocational high school. Thus the training was technically within the framework of employment but was neither on-the-job training nor plant pre-assignment instruction.

One should not, however, infer from the description of these special training arrangements that the usual in-employment training offers any such systematic program. For the most part it consists of having the foreman or one of the regular production workers show the new worker the job that has to be done. The rest is then up to the worker, and thus 90 per cent of all informal in-employment training should probably be called on-the-job *learning* rather than on-the-job *training*.

Informal training or learning on the job applies not only to the

preparation of the operative in mass production, for whom it is not wholly inadequate, but also, to a large extent, to the training for more diversified and skilled work That this situation exists is obvious from the small number of apprentices in industry. In the National Industrial Conference Board survey, 57.7 per cent of the 473 companies covered reported apprentice training, but the actual number of apprentices was only 7,322 or 1.1 per cent of the persons employed On the other hand, on-the-job training was reported by practically every company that professed to give any training at all. Thus it appears that even for craftsmen, training on the job is virtually the only training available. This is the salient and, at the same time, the weakest point in in-employment training.

If such training is at all systematic, the new employee starts at the lowest level, which may mean transporting supplies, cleaning equipment, or doing other odd jobs of this nature. Under favorable conditions and if the worker is eager for advancement, he may then become a helper for an experienced employee, and, on the basis of what he can observe and with some opportunity to perform the various operations, he may later try his hand as a skilled worker in the same or in some other plant.

In other instances the worker's way will be less smooth and direct. Even without having had the opportunity to acquire skills, he may nevertheless find employment by claiming to be a skilled worker, and then lose his first few jobs in rapid succession because he does not possess the skills he claimed. Finally, by trial and error, he may learn enough to enable him to hold a job, although possibly not in the trade he originally selected. Correspondence courses or brief attendance at private trade schools has in the past often helped workers to cope successfully with the problems of entering and learning a trade in such a way. The amount of skill acquired by this rather slipshod method of 'stealing a trade' depends largely on the interest and aptitudes of the individual worker and on his luck in obtaining jobs and work that give him an opportunity to improve his occupational techniques and knowledge.

In the many business enterprises investigated for the purposes of

this study, the methods of on-the-job training described above were used almost to the exclusion of any other, and despite their shortcomings they were not considered by management in general as inadequate as a preliminary analysis of the situation would suggest. Even small shops have adopted these methods, making the best of what is obviously the simplest and most direct way of enabling the worker to perform the necessary operations.

Closer analysis, however, reveals that such training can be used successfully only because many key positions in the work process are held by older, experienced, and well-trained workers. If the percentage of these key men is high enough, apparently all production requirements, including even diversified and custom work, can be met. During the war, it is true, the proportion of skilled labor in war production industries was extremely low, and the problem of utilizing the limited supply to the best advantage had to be solved by re-engineering, further breakdown of jobs, and the extensive use of lead men and setup men to prepare and supervise the jobs of newcomers to the labor force. Such a readjustment was possible only because war industries were largely a matter of mass production, but it has never been accepted that these measures could cope successfully with the peacetime needs of the economy as a whole.

Definition of Training Time

It is manifestly impossible to make generalizations in terms of the nature of in-employment training in various manufacturing industries, because the countless operations taught vary too widely for comparison. The only common denominator is the length of training given. It is, therefore, on the basis of findings with reference to the time spent on training that certain conclusions have been drawn regarding the distribution and degree of skills indispensable to the proper functioning of a large sector of our national economy.

Length of training, or the amount of time that is necessary for learning each of the many manipulative skills required for modern

production, is one of the most controversial issues in any discussion of occupational training. Opinions vary widely, some holding that in modern technology nearly all jobs can be learned in a few hours or days, while others maintain that training for nearly all trades requires several years. Even when the discussion is narrowed to a single trade—that of tool and diemakers, for instance—there is strong disagreement. According to some authorities it takes ten years to become a skilled toolmaker; on the other hand, many large plant owners will vouch for the fact that tools and dies for war production were turned out by men who, with few exceptions, had had no more than a few months of training.

The root of such a contradiction is confusion over the terminology involved rather than a basic difference of opinion on the point at issue. The first matter to be clarified is the distinction between training for a job and training for an occupation. In small shops, in repair work, and in diversified production, the terms 'job' and 'occupation' may be interchangeable; in mass production, this is by no means the case. An operative in mass production may work at a special machine equipped with single-purpose jigs and with tools already ground and set to cut one work piece to a given size for which the machine has been adjusted in advance. In these circumstances the skill needed for the actual operation is indeed very limited and the required training time is therefore correspondingly short. But such an operation or job involves only one simple skill within a traditional occupation or craft, the mastery of which requires much longer training.

Once this distinction has been established, the next major question is what constitutes required training. As a rule, it is assumed to include all the essentials for converting a 'green' worker—that is, a completely inexperienced worker—into an efficient performer of the required operations. But a 'green' hand is chiefly a theoretical concept, for virtually all workers entering industry have had elementary and some high school education and are thus familiar with the discipline of learning. Furthermore, most workers have had a certain amount of shopwork or manual training in school, and

have handled tools or even machinery. It is also important to point out that only a small proportion of the new employees in any plant have just left school. Most so-called 'green' workers have been employed before, either in the same or in a related industry, and have thus acquired work habits and improved their manual dexterity. Statistically determined training periods should therefore be understood as the period of training over and above the acquisition of such educational and occupational background.

Statistical results on the length of training also vary according to the degree of efficiency that a worker is expected to achieve in the stated period. A beginner in the clothing industry, for example, may learn in a few minutes how to start and stop a power-driven sewing machine, in a few hours how to sew a straight seam, and in a few days how to work on clothing that is to be placed on the market. It may, however, take four weeks before the worker earns his wage rate, three months before he reaches the average piece rate, and from six to nine months before complete independence and top efficiency are attained. Statements concerning the length of training are therefore misleading unless it is clearly understood that professional speed is to be acquired during the designated period of training.

The length of training required to achieve satisfactory performance has been the subject of many investigations, but they are all concerned with the training of the employed; pre-employment training, especially vocational training in school, and its bearing on the length of in-employment training are not considered.[1] The investigations, moreover, are usually confined to length of training for a job and do not take into account systematic apprentice training for a trade. Nor do they include the length of training in very small shops or repair work; they are mainly concerned with manufacturing industries. It should also be kept in mind that the training period required to prepare a worker to perform a single job

[1] In the literature on vocational training, the term 'post-employment training' as contrasted with 'pre-employment' training is frequently used. This study prefers 'in-employment training' since 'employment' implies not only the act of hiring a worker but the entire period of the worker's service.

or operation acceptably seldom corresponds to his complete in-employment training. The average worker changes jobs frequently and each time receives some new training, however little; as a result he may be trained one, five, or twenty times in the same, related, or unrelated industries. A basic distinction has therefore to be made between the length of training for a single job and the accumulated training received by a worker during his occupational life.

Length of Training in Various Industries

The 1937 National Industrial Conference Board survey investigated not only types of in-employment instruction but also maximum length of training in a representative group of 473 companies with an aggregate of 626,668 employees.[2] Replies from 375 companies to a questionnaire on the subject of training time required for the ordinary occupations supply the basis for the following figures.

	No. of companies	*% of total*		*No. of companies*	*% of total*
1 week	17	4.5	1 year	31	8.3
2 weeks	12	3.2	2 years	35	9.4
3 weeks	17	4.5	3 years	19	5.1
4 weeks	32	8.5	4 years	24	6.4
2 months	50	13.3	5 years	9	2.4
3 months	44	11.7	More than 5 years	2	0.5
4 months	6	1.6			
5 months	2	0.5	Varying periods	23	6.2
6 months	52	13.9			

Combined in larger units the results appear as follows:

	No. of companies	*% of total*
2 months	128	34.0
3 to 6 months	104	27.7
6 months to 2 years	66	17.7
More than 2 years	54	14.4
Varying periods	23	6.2

[2] National Industrial Conference Board, *Training for Industry*, Studies of the National Industrial Conference Board, No. 237 (New York, 1937).

Of the 375 companies involved, 34 per cent reported a maximum training period of 2 months or less, and 27.7 per cent a period of 3 to 6 months; in other words, 61.7 per cent, or more than three-fifths, of the companies trained their workers for production in 6 months or less. The results are expressed not in numbers and proportions of employees or operations but according to companies only, thus obscuring important data, no further breakdown of the figures has been attempted.

An earlier and more intensive study of training time was conducted in 1931 by Charles A. Koepke and his associates at the University of Minnesota, and was repeated in 1936 for purposes of comparison.[3] These investigators attempted to determine the most effective training periods for a variety of operations, but their findings were not so representative as those of the National Industrial Conference Board, since coverage was restricted to 88 firms in 33 industries involving only 4,133 operatives or jobs. In so far as it was possible, the selection of plants in any one industry was made on the basis of representativeness, but it is obvious that the results could have only a relative and regional value.

The 1931 results yielded the following schedule of training time for satisfactory performance of all operations. Without publishing figures for earlier periods, Koepke asserted that these

	% of jobs
Less than 2 weeks	22
2 weeks to 2 months	33
3 to 9 months	17
10 months to 2 years	16
2 to 4 years	8
More than 4 years	4

percentages revealed a drastic shortening in training time, a development which he attributed to the breakdown of a great many industrial operations into small units. Although the methodological

[3] Charles A. Koepke, *A Job Analysis of Manufacturing Plants in Minnesota* (Minneapolis, 1934) and *Changes in Machinery and Job Requirements in Minnesota Manufacturing* 1931–1936 . . . (Philadelphia, 1939).

approach of the Koepke survey differed greatly from that of the National Industrial Conference Board investigation, the figures of both confirm the fact that a training period of less than 3 months is all that is necessary for half the jobs, and that high skills, acquired in a minimum of 2 years, are required for about 12 per cent.

On the basis of his 1936 survey Koepke contended that advances in production techniques were continuing to cut down training time. Comparison with the 1931 study reveals that increases in training periods below 2 months considerably surpassed decreases, and that decreases in periods above 2 years exceeded increases. The number of production workers whose training periods were below 9 months increased 17 per cent—from 487 in 1931 to 572 in 1936. While these findings were confined to regional or local conditions, they nevertheless corroborated a nationwide trend. Koepke concluded that 'the process of increasing division of labor through increased mechanization is still running its course although that course may not now be so rapid or so revolutionary as before.'[4]

In order to be able to form an independent judgment on the subject of training time, this study made its own investigation of a representative group of companies in various industries—shipbuilding, radio, metal, electrical, textile, paper, glass, and others—with a total of 80,004 workers. The situation in 1941 and 1942 is indicated by the following figures. The deviations from Koepke's

	% of jobs
Less than 4 weeks	29
1 to 3 months	14
4 to 9 months	32
9 months to 2 years	14
More than 2 years	11

results, such as a higher proportion in the 4 to 9-months group and a smaller proportion in the 1 to 3-months group, are minor, indicating perhaps a difference of only several weeks of training. The lack of data on the numerical and representative strength of

[4] Koepke, *Changes in Machinery* . . . (cited above), p. 36.

the firms investigated in both studies may also have some bearing on these differences.

Expressed in larger units of time, however, a comparison of the surveys made by the National Industrial Conference Board, Koepke, and the authors of this study reveals a remarkable similarity in the findings, which may be seen in the following figures. The percentages given for the National Industrial Conference Board refer, of course, to the total number of companies investigated, while those of the other two pertain to the total number of operations or jobs. All three surveys suggest that a considerable

	Less than 9 mos.	*9 mos. to 2 yrs.*	*More than 2 yrs.*
Natl. Indus. Conf. Bd.	70.4%	14.4%	15.2%
Koepke	72.0	16.0	12.0
Authors	75.0	14.0	11.0

portion of the jobs require a training period of only a few months and that about 20 to 30 per cent require not more than a few weeks of training for satisfactory performance.

But another and equally important fact is revealed by the tabulations: namely, that a sizable share of jobs even in large manufacturing plants—some 12 per cent or more—call for highly skilled workers. These jobs cannot be satisfactorily filled without substantial training over a period of years. Koepke emphasized that the highest skills continually lost ground but he admitted that the change was gradual and had ceased to be spectacular.[5] Still more explicitly, the National Industrial Conference Board study contended that 'the opinion advanced at one time that intensive and progressive mechanization was reducing the need for highly skilled labor had not been borne out by events. While a less comprehensive mechanical training than formerly may give adequate preparation for many occupations, a high degree of special skill is necessary to secure best results from elaborate and intricate machines, and such skills can be built satisfactorily only on a sound foundation of the fundamentals of machine operation.' [6]

[5] Ibid. p. 43.
[6] National Industrial Conference Board, op. cit. p. 28.

Thus the counterpart of the continuous shortening of the training time for the majority of jobs is the stability of the proportion of jobs for which highly skilled workers are needed in industry. While the latter constitute a minority, they are indispensable to the work of the vast remainder of production workers.

Length of Training in Specific Industries

Approaching the subject of length of training from another angle, an examination of training policies and characteristics in certain individual industries was made. A series of industry manning tables published in 1943 and 1944 by the War Manpower Commission served as a basis for the accompanying figures showing, for fifteen different industrial groups, the percentage distribution of workers by the length of their training periods.[7]

	A *(over 24 mos.)*	*B* *(13–24 mos.)*	*C* *(6–12 mos.)*	*D* *(3–6 mos.)*	*E* *(2 mos. or less)*
Bitum. coal mines (udrgrd.)	22.1%	19.3%	20.4%	26.4%	11.8%
Bitum. coal mines (strip)	24.3	11.6	18.7	17.1	28.3
Gray iron jobbing foundries (less than 100 workers)	25.8	14.3	13.4	34.6	11.9
Gray iron jobbing foundries (more than 100 workers)	16.1	5.6	14.0	29.4	34.9
Forgings	20.1	7.1	13.3	31.6	27.9
Ball & roller bearings	13.4	6.7	14.3	45.1	20.5
Machine tool accessories (re-engineered)	30.5	16.3	16.3	27.6	9.3
(slightly or not at all re-engineered)	66.8	12.5	5.0	10.3	7.5
Nonferrous metal foundries	27.5	11.8	10.5	36.9	13.3
Metal aircraft parts	13.2	9.6	17.8	42.2	17.2
Fabricated plastic products	8.4	4.7	8.9	36.2	41.8
Commun. equipment (radio, radar, etc.)	5.6	4.1	5.6	36.3	48.4
Southern sawmills	8.0	5.6	13.1	40.2	33.1
Pulp, paper, paper products	14.0	10.4	11.0	26.2	38.4
Motor truck transport.	7.6	6.9	39.0	39.5	7.0

[7] The tables have been computed on the basis of two or three dozen samples per industry, taken from various states and regions, and analyzed

The percentage of workers in training grades *A* and *B* (13 months or more of training) is remarkably high, especially in the iron industry and the metal trades. Omitting all reference to the machine tool accessories industry, which has a particularly great need for highly skilled labor, from 20 to 40 per cent of the workers are found in these two training groups, amounting to an industrial average of 28.5 per cent.[8] The percentage of skilled labor is also exceptionally high in the bituminous coal mines; it reaches 25 per cent in the pulp, paper, and paper products industries, and does not fall below 13 per cent in any of the others with the exception of communications equipment where it is 9.7 per cent.

On the whole, the figures of this tabulation indicate a higher percentage of long training periods than do those of Koepke and our own investigation, but too much importance must not be attached to this variation. In the first place, the particular industries selected for the manning tables would inevitably show a high percentage of skilled workers. And in the second, because of the abnormal manpower situation in wartime the accuracy of the manning tables may be questioned. It is even suggested in the text of the tables that estimates of training time may have been inflated by the industries in question in order to emphasize the 'essential' aspect of workers and jobs and thus gain military draft deferment for their employees. But the allowance of even a liberal margin for error and inconsistency does not decisively alter the fact that skilled occupations, although constantly disappearing and reappearing in new categories as a result of technological changes, continue to exist as such, and to resist any substantial reduction in the length of training required for their adequate performance.

The automobile industry, as is well known, is outstanding for its exceptionally short training periods, which were made possible by a drastic transformation of production techniques in the two

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and computed by the Division of Occupational Analysis and Training Tables (Bureau of Manpower Utilization) of the War Manpower Commission.

[8] This percentage represents an unweighted average, giving equal weight to each industry irrespective of the number of persons employed or the number of plants covered by the investigation.

decades preceding the outbreak of World War II. Between 1919 and 1929, productivity in the automobile industry alone rose 134 per cent compared with an increase of only 43.2 per cent in industry as a whole. Most operations have been simplified and specialized to such a degree that they require a minimum of skill for satisfactory performance. R. J. Thomas, former president of the United Automobile Workers, reporting to the Temporary National Economic Committee of the Congress in 1940[9] on the development of this industry, asserted, on the basis of data furnished by workers, that in the plants of the Ford Motor Company the following conditions obtained: 43 per cent of the workers required 1 day to learn their jobs; 36 per cent, up to 8 days; 14 per cent, 1 week to 1 month; 6 per cent, 1 month to 1 year; and 1 per cent, more than 1 year.

These figures are substantiated by the superintendent of the Ford Industrial Schools[10] who reported that practically all employees with the exception of apprentices were trained on the job in a period not exceeding 4 weeks.[11] As Mr. Thomas pointed out, however, during the first decade of rapid expansion in the automobile industry, highly skilled workers—carpenters, blacksmiths, cabinetmakers, sheetmetal workers, and the like—were attracted into the industry by high wages, thereby creating a reserve of skills that could be drawn on for a considerable time.

The training schedule of a dry dock and shipbuilding company employing 26,000 workers indicates conditions in that industry before the war. The following figures show what percentages of the workers were in each training bracket. The group receiving the longest training included the apprentices who constituted 2 per cent of the total labor force. Of the workers who were trained from 1 to 3 months, 20 per cent were trained on the job and 5 per cent in vocational schools; for all other groups, training on the

[9] U.S. Temporary National Economic Committee, *Investigation of Concentration of Economic Power*, Hearings before the T.N.E.C., Congress of the United States (76th Congress), Part 30: Technology and Concentration of Economic Power (Washington, 1940), pp. 16361–2.

[10] Letter to the authors from F. E. Searle, Ford Motor Company, Dearborn, Michigan, 29 June 1943.

[11] This statement refers to factory employment only.

job was the only method employed and was considered by the director of training to be most desirable.[12] The length of training in this industry, with about 75 per cent of the labor force receiving less than 9 months and 15 per cent getting more than 2 years, corresponds to the proportions in other industries; the percentage trained for 4 to 9 months is higher than the average in manufacturing industries.

Less than 4 weeks	10%
1 to 3 months	25
4 to 9 months	40
9 months to 2 years	10
More than 2 years	15

The hat and millinery industry offers a good example of one in which technological changes have been hardly noticeable in recent years.[13] The percentage distribution of the 60,900 members of this industry by the length of their training periods is shown by the following figures. A training period of up to 6 months for 73

1 to 5 weeks	3%
6 to 13 weeks	13
3 to 6 months	57
1 to 2 years	5
2 to 3 years	12
More than 3 years	10

per cent of the labor force in this industry corresponds to the industrial average. But the percentage trained in only a few weeks is lower than the average in manufacturing industries, while a larger proportion than is usual falls within the 3 to 6 months bracket. The 22 per cent trained for more than 2 years is above the average standard. Within the industry itself there was considerable variation in training periods. In the fur felt hat industry 40 per cent were trained for more than 3 years, and the remaining

[12] Letter to the authors from James I. Teat, Alabama Dry Dock and Shipbuilding Company, Mobile, Alabama, 24 April 1943.

[13] Data provided by Alfred Braunthal, research director, United Hatters, Cap and Millinery Workers (AFL).

60 per cent in less than 6 months, while in the men's cap and cloth hat industry only 15 per cent are trained for 1 to 2 years and the remaining 85 per cent in less than 6 months.

Despite certain marked deviations, individual industries tend to follow the training pattern of industry as a whole. Technological progress, especially widespread mechanization and advancing division of labor, has been instrumental in reducing training time for a considerable portion of the labor force. Nevertheless, the need for highly skilled labor remains more or less constant.

Length of Training in War Industries

With the huge defense program of 1940 and 1941 and the war production needs of the years immediately following, American industry was faced with a formidable manpower problem. Millions of workers, many of them women, entered the labor market for the first time and had to be given initial training; others who shifted from civilian to war production had to be retrained.

Under these conditions it was imperative to cut training time in war industries to a minimum and to concentrate the instruction on bare essentials. The War Manpower Commission industry manning tables show remarkably little, if any, influence of wartime conditions on length of training, but these tables must be interpreted with caution, as has already been pointed out. Figures gathered especially for this study furnish evidence of marked effects, and permit interesting comparisons with training periods under prewar conditions (Table 7).

Without exception, although to varying degrees, these examples show a significant increase of short training periods and a sharp decline of longer training time The continuance of apprenticeship, even on the limited prewar scale, was rendered almost impossible by the urgency of the situation. On the other hand, there were no signs of the disappearance of skilled jobs despite wartime pressures. To a smaller or greater extent they survived.

In judging the shortening of training periods in various industries, it must be remembered that the degree to which job re-

TABLE 7. PERCENTAGE DISTRIBUTION OF WORKERS IN SELECTED REPRESENTATIVE INDUSTRIES, BEFORE AND DURING WORLD WAR II, BY LENGTH OF TRAINING PERIOD

Industry	*Under 4 wks.*		*1–3 mos.*		*4–9 mos.*		*9 mos.–2 yrs.*		*Over 2 yrs.*	
	Prewar	War	Prewar	War	Prewar	War	Prewar	War	Prewar	War
Elec. products [a]	20%	30%	25%	30%	25%	20%	15%	12%	10%	8%
Plastics div., elec. co.[b]	—	10	—	20	50	50	10	10	40	9
Dry dock & shipping [c]	10	29	25	40	40	20	10	10	15	1
Metal [d]	30	80	35	8	25	4	10	6	—	-
Paper [e]	—	—	10	20	10	30	80	50	—	-
Glass [f]	38	57	19	28	28	5	10	5	5	5

[a] Employing 2,000 men, 10.000 women.
[b] Employing 6,000 men, 650 women.
[c] Employing 22,000 men, 4,000 women.
[d] Employing 1,069 persons.
[e] Employing 2,903 men, 479 women.
[f] Employing 4,369 men, 1,874 women.

engineering was possible exerted a strong influence on training practices. The magnitude and nature of the work prevented some plants from re-engineering their jobs, while others, because of their occupational structure, were able to do so with little or no disturbance. The importance of re-engineering for length of training is reflected even in the manning table data for the machine tool accessories, which reveal the following contrast between the two types of plants (the figures refer to the percentage of employees in each training period category).[14]

	Type I (*Re-engineered*)	*Type II* (*Not re-engineered*)
A (over 24 mos.)	30.6%	66.8%
B (13 to 24 mos.)	16.2	12.5
C (7 to 12 mos.)	16.3	5.0
D (3 to 6 mos.)	27.6	10.3
E (2 mos. or less)	9.3	7.5

Through production planning and job re-engineering, Type I plants were able to operate with extended training for only 30.6 per cent of the employed, while Type II plants required the training for 66.8 per cent. Type I plants could make wide use of unit-skilled machine operators; Type II plants, on the contrary, operated with a production staff composed almost entirely of multiskilled men. In Type I plants, toolmakers, diesinkers and setters—the most highly skilled craftsmen—comprised only 11.5 per cent of the entire labor force; in Type II plants they accounted for 45 per cent or four times as many. But in the machine shop and related occupations the ratio is reversed: they constituted 44 per cent of the labor force in Type I plants and only 8 per cent in Type II plants.

The most decisive factor in re-engineering is the size of the plant. In small factories employing only a few dozen workers, job breakdown is almost out of the question, and in plants employing 50 to 100 workers its possibilities are definitely limited. The following

[14] Allowance must be made for errors and inconsistencies in the manning tables, already referred to in the text.

figures on the distribution in 1939 of wage earners in manufacturing industry, according to the size of the plant (number of workers employed), indicate the limits of re-engineering.[15]

1 to 5 workers	2.6%
6 to 20	6.9
21 to 50	9.7
51 to 100	10.8
101 to 250	18.7
251 to 500	16.1
501 to 1,000	13.0
1,001 to 2,500	11.9
2,501 or more	10.5

Of the total labor force, 19.2 per cent worked in plants employing fewer than 50 workers, and an additional 10.8 per cent in plants employing 50 to 100 workers. Thus it appears that a sizable portion of the labor force, even in the manufacturing industries, is absorbed by small plants in which no rapid or extensive job breakdown can be expected. The skills needed in these small shops continue to cover a much wider range than those required for a particular job or operation in larger plants.

In reviewing the effect of drastically shortened training periods, several large companies who were called upon to evaluate this development pointed out that 'their estimates represented as much as 50 per cent reductions from their normal training time and that they could not maintain an efficient organization in normal times by adhering to these standards.'[16] Some of the methods devised for this accelerated training may, of course, have some bearing on peacetime production, but their applicability to the economy as a whole should not be overestimated.

Training for Versatility

Industrial training policies have in recent years been strongly influenced by the potential occupational mobility to be derived

[15] Sixteenth Census of the United States, 1940, *Manufactures*, 1939, vol. 1, p. 120.

[16] National Industrial Conference Board, 'Time Schedules in Job Training,' in *Studies in Personnel Policy*, No. 55 (New York, 1943), p. 2.

from short training periods. In a sense, this amounts to making the best of an existing situation. The growth of new industries and new production methods, and the vigorous expansion of production, as a whole, encouraged workers to shift from job to job and from industry and industry. For example, in 1931, among 26 industries in Minnesota there were 8 in which more than 85 per cent, and 17 in which more than 50 per cent, of the operations were being performed by workers who had transferred from unrelated industries. And in 1936, 40 to 50 per cent of the workers in the same state were found in jobs to which they had shifted from unrelated industries during the previous five years.[17]

Faced with the fact that workers were insistent on mobility, a number of plants apparently decided to train their new employees for versatility, in an effort to build up a body of reserve skills on which the plant could draw as needed and to give the worker a chance to change jobs within the plant—a system with obvious advantages to both worker and employer. The actual extent of such multioperational training can be ascertained only with difficulty. The Essex County vocational schools, after investigating the requirements for semiskilled workers with a view to developing multioccupations courses, stated that 'only in a very few instances is anything being done in industry to develop in semiskilled workers the ability to do more than one highly specialized job or process.'[18] The National Industrial Conference Board, on the other hand, reported that of 473 companies queried, 222 or 47 per cent claimed to have an established policy of training employees for versatility, while 34 others or 7 per cent noted the occasional adoption of such a policy. Most of these programs were scattered throughout the electrical, machine and machine tool, automobile and automobile parts industries. A variety of goals were set for the training: in addition to the plantwide systems reported by 15.2 per cent of the companies, there were special types for interdepartmental transfers (27 per cent), rotation within a department (21.9 per cent), training for promotion or upgrading (12.5 per

[17] Koepke, *A Job Analysis . . .* (cited above).

[18] Thomas L. Norton, *Education for Work* (New York, 1938), p. 192.

cent), and for the development of selected employees only (7 per cent).[19] Koepke also stated that most of the companies investigated pursued a definite policy of moving workers from one type of job to another in order to relieve the monotony of routine work.

Actual training practices may well lie between these two extremes. The holding of many jobs in the same or consecutive employment by the same worker is the rule and not the exception. All companies endeavor to have more than one worker who can perform certain crucial operations on their production lines. And if a particular operation ceases to be needed because of changes in production, the usual practice is to give the worker an opportunity to fill another job in the same plant. Also, if one of the more difficult jobs is open, it is generally assigned to an old worker who has performed similar operations rather than to a new employee. Other transfers are made because more pleasant jobs become available or simply because a worker is eager to change. All these shifts within a plant lead to retraining in the same way that a complete change of employment would. Since such mobility and retraining are not restricted to young workers—according to the National Industrial Conference Board survey, 83 per cent of the companies that trained young workers also trained workers between thirty and forty years of age [20]—the total amount of multijob training is indeed considerable. Nevertheless, systematic rotation of a substantial portion of the operatives in industry for the express purpose of promoting versatility remains relatively rare.

Within the last decade, it is true, a more determined effort has been made to increase the reservoir of skilled labor. With the expansion of economic activity in 1936–37, the shortage of skilled labor became acute in many industries. It was clear that revitalization of the necessarily slow apprenticeship system could not solve the immediate problem, and that a time-saving system would have

[19] The objectives of their versatility training programs were not specified by 16.4 per cent of the companies.

[20] National Industrial Conference Board, *Training for Industry* (cited above), p. 20.

to be applied. Many of the difficulties were overcome by upgrading routine workers and thereby giving them an opportunity to acquire a wider range of skills. In other cases the new trainee assumed the more formal position of a learner who received systematic instruction designed to make him a partial trade specialist. In general, 3 to 5 months were allotted to training, depending on the number of machines whose operation was to be mastered. Despite strong labor union opposition to this 'dilution of skills,'[21] production for war made learnership at least temporarily unavoidable.

The program for learners at Thompson Products, Inc., of Cleveland, is a successful example of this method of training. It was introduced in 1939 as a substitute for the company's regular four-year apprentice training course, which could not supply the demand for skilled workers as fast as they were needed. Most of the operators were trained in 15 weeks; the training for automatic screw and internal grinding machine operation required 17 to 22 weeks, in each of which 38 hours were devoted to actual shop practice and 4 to classroom work.[22] Although the learners' program reduced by 72 per cent the usual 18 months estimated by these manufacturers as sufficient for the acquisition of the necessary skills, the foremen reported that it produced 95 per cent efficiency, as compared with 50 per cent efficiency on the part of workers hired from the outside and not put through the course. The company attributed this result to the fact that a combination of theoretical training and shop practice imparted a clearer understanding and more intimate knowledge of the principles involved in the machines and, as a consequence, more intelligent performance of the work. It should not be overlooked, however, that the prerequisites for learnership at the Thompson company were graduation from technical high school and a minimum age of about twenty-five. Also, many of the learners were chosen from

[21] United Steel Workers of America, *Industrial Training*, Publication No. 4 (Pittsburgh, 1940[?]), p. 1; UAW-CIO International Education Department, *Apprenticeship and the UAW-CIO* (Detroit, 1941), pp 5-6.

[22] Ray Livingstone, 'From Learner to Skilled Operator in Five Months' Time,' in *Factory Management* (May 1940).

workers already employed by the plant and whose capacities for further development had been demonstrated.

During the war, when systematic upgrading and learnership programs reached their peak, many other claims of successfully shortened training periods were put forth. The details of the programs vary according to the needs of individual plants. The achievements of this kind of training on a basis less rigid than that of apprenticeship, but more organized than mere on-the-job training, make it probable that similar procedures will be retained by American manufacturing industry.

X

Apprenticeship: Its Organization and Status

FOR various reasons already outlined in the opening chapter of this study, apprenticeship in the United States never gained either the scope or prestige that it has always enjoyed in European countries. Neither the economic nor the social development of this country favored the expansion of any form of indentured labor. Indeed the whole problem remained so far in the background that not until twenty years after the importance of in-school vocational education had been acknowledged by federal legislation did apprenticeship become a matter of national concern.

It is true that a number of state and private ventures in the field preceded the passage of the Fitzgerald Act in 1937. The demand for skilled labor imposed by our role in World War I prompted several attempts to promote apprenticeship. For example, in 1915 the apprenticeship law of Wisconsin was revived, amended, and put in working order. This contained provisions for indenture, instruction time, regulation of wages and hours, working schedules, and supervision by the State Industrial Commission—all of them items that were later incorporated in the Fitzgerald Act. A board created to administer the law was composed of employers, unions, and continuation school representatives, its secretary was the full-time supervisor of the apprentices. But for a long time the Wisconsin law remained an isolated attempt to regulate apprenticeship on a statewide basis.

In 1921 the building trades launched a national apprenticeship program, in an effort to relieve an acute shortage of skilled labor in this field. An apprenticeship commission, composed of representatives of workers, employers, and members of the Building

Congress, was set up to act in an advisory and supervisory capacity. For each of the separate trades there were state and local commissions, the latter of which fixed the terms of the apprentice agreements.

Some years later the National Metal Trades Association promoted a campaign for a national apprenticeship program. This called for the organization of industrial America into apprenticeship districts and the appointment of directors for each district as well as one for the national organization.

None of these efforts met with any substantial success but they served as a useful basis for the subsequent federal legislation.

The Fitzgerald Act and Its Application

The purpose of the Fitzgerald Act is to establish labor standards for apprenticeship; to extend their application to apprenticeship contracts; to bring employers and employees together for the formulation of apprenticeship programs; to cooperate with state agencies engaged in the formulation and promotion of standards, and with other federal agencies. Under the terms of the Act, two national agencies were created for its implementation: the Federal Committee on Apprenticeship and the National Apprentice-Training Service. The first of these is composed of two representatives of management and two of labor, and one each from the Department of Labor and Office of Education; and its main function is to develop standards and to shape policy. The second is the administrative branch, which advises the Committee on the setting up of standards, publishes the standards finally agreed upon, and registers all agreements between management and labor. Originally organized as a division of the Department of Labor, the Service was transferred during the war, first to the Office of the Administrator of the Federal Security Agency and, in 1942, to the War Manpower Commission. In September 1945 it was returned to the Department of Labor.

The success of the agencies depended entirely, of course, upon effective decentralization. The state labor departments were there-

fore requested to create state apprenticeship councils of which there are now twenty-four.[1] These are patterned after the federal Committee with equal representation of employers and labor, and of state departments of labor and state boards of vocational education. The state councils formulate their own standards and procedures, basing them on those of the federal Committee.

Following a somewhat different plan of decentralization from that of the Committee, the National Apprentice-Training Service established regional offices, of which there are now twelve, each with a small staff headed by a supervisor representing the national unit in Washington. The regional officers cooperate with and advise the state councils, or deal directly with management and labor in states where no councils exist.

Although the actual development of these agencies resulted from the initiative of public authorities, management and labor alone were responsible for the creation of proper bodies to administer the apprenticeship law at national, local, and plant levels. Employers' associations and trade unions therefore appointed joint apprenticeship committees to function at the national level in developing standards and encouraging local employers and labor unions to set up apprentice-training programs to conform with the standards set by the federal Committee. These national joint trade committees work in close cooperation with the Apprentice-Training Service, obtaining from it statistical reports or analyses of trade training problems, copies of new local training programs, and data on appointments to local joint committees, and furnishing, in their turn, advice to the Service on the handling of special training problems in the respective industries.

At the local level, joint apprenticeship committees for particular trades were newly created, or built up from existing employer-employee organizations. These committees are responsible for developing local standards for the employment and training of all

[1] Arkansas, California, Connecticut, Florida, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Minnesota, Montana, Nevada, New Hampshire, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia, Washington, Wisconsin.

apprentices in the trade either by organizations of employers or others who subscribe independently to the written apprentice agreement.

Individual plant apprenticeship committees have also been established on a labor-management basis. These committees set up standards, provide a full- or part-time supervisor of apprentices, and outline his functions in relation to those of the committee. It is also possible for employers who are not members of an organization, and whose employee organizations are not particularly concerned with the training of skilled workers, to establish their own apprenticeship systems and register with the state council or the regional office.

To sum up—the system includes national agencies, state councils, and regional offices, composed of representatives of management, labor, and government labor and education offices; and management-labor committees operating at national, local, and plant levels. In all its connections with apprentice training the government acts only in an advisory capacity, exerting no compulsion whatever. While the Apprentice-Training Service develops the programs of employment and training according to the standards set by the federal Committee, the working out of details is left entirely to labor and management, who devise the standards for individual trades on a national level, but assign to local and plant representatives the task of implementing the rules and regulations according to specific local conditions. In general, the local joint committees function for the smaller enterprises, while plant committees operate in large establishments. Thus the local and plant committees do the final practical job. Their powers range from the enforcement of standards and the supervision of training to selecting apprentices and determining their number. The effectiveness of their work depends upon how well they succeed in promoting good training and protecting labor standards.

The Joint Apprenticeship Committee of the New York Electrical Contractors' Association and Local 3 of the International

Brotherhood of Electrical Workers (AFL) is a good example of a local joint committee formed by an established employers' association and a strong union. The duties of this committee include: determining the need for apprentices in the locality, and the shop facilities available for the necessary experience on the job; establishing minimum standards of education and experience; determining the employer's competence to give training; making certain that apprentices are under agreement, that they are continuously employed, adequately instructed, or transferred to another employer if necessary; determining the quality and quantity of experience and making sure that the apprentice obtains it; arranging for tests on progress in manipulative skills and technical knowledge; hearing and adjusting all complaints of violation of apprentice agreements; assuming responsibility, in general, for the successful operation of the apprenticeship standards; keeping in constant touch with apprentices, employers, and journeymen; cooperating with public and private agencies and with the director of apprentice training and the instructor of related training; developing public interest in apprentice standards. Other duties involve notifications, registrations, recommendations for examination, and maintenance of careful records of apprentices.

The duties of plant apprenticeship committees are somewhat less extensive since only one employer is involved in an agreement, but in individual cases they are more important. In addition to supervisory and claim-adjusting functions, which *mutatis mutandis* are similar to those of the local committees, the plant committees frequently pass on apprentices after preliminary examination and approval by the personnel director of the company. And in some instances, they may adjust the ratio of apprentices to journeymen and decide on the number of apprentices to be employed in a plant.

Adjustment practices are especially necessary in large plants that have a number of divisions at work on a variety of products in diversified apprenticeable trades. What is involved in this kind of planning is demonstrated by the experience of the Tennessee

Valley Authority which employed 271 apprentices among 5,000 skilled craftsmen in 1941 and had to make agreements with fifteen different trade unions. TVA reviewed this work as follows:

'The determination as to how many apprentices shall be employed and what shall be the ratio between apprentices and journeymen in each of the crafts is made by the Central Joint Council. When, as in earlier days, it was the custom to assign ratios for each local project separately, it was found that fluctuations in project activity, and consequently in employment, adversely affected the continuity of employment of apprentices. . . . It was, therefore, recently decided by the Central Joint Council to stabilize the employment of apprentices by establishing craft ratios applicable to the Authority as a whole. In this step, both management and labor were in complete accord. Thus, in accordance with present practice, it is now possible for the number of apprentices relative to the number of journeymen in the same craft to be greater or less than the accepted ratio at a given project without upsetting the programs as a whole . . . The rate of hiring apprentices within the limits of this stabilization understanding is determined by the total construction schedule, which is planned well ahead of time. As a result, fluctuations in the employment of apprentices are negligible, and it is possible for the Authority, through the council, to determine in advance how many additional apprentices it will need.' [2]

While the apprenticeship committees set, supervise, and enforce rules, the training supervisors are the executives proper. They work at a local or plant level, and their relationship to the apprenticeship committees varies; sometimes they are members of these committees, sometimes not, but in any event they are responsible to them. There are instances in which the salaries of the training supervisors and of their staffs are paid by the union, an arrangement that strengthens union influence. In other cases, the training supervisors are members of the plant personnel.

[2] U.S. Apprentice-Training Service, *Report on the Apprentice-Training Program of the Tennessee Valley Authority* (Washington, 1942), p. 5.

Statistical Analysis

When the census of 1940 was taken, the Fitzgerald Act had been in existence barely three years. It would therefore be unjustifiable to use the census figures as a measure of the effect of the Act on apprentice training. The number of apprentices given was some 84,000—only 6,600 higher than the 1930 figure.[3]

Although the Apprentice-Training Service felt unable to estimate with assurance the number of apprentices at the end of 1942, it settled on 200,000 as a best guess. This figure, which is so much higher than the 1940 census report, is explained by the Service by the fact that many more young people, especially those of 16 and 17 years of age, entered war industries as 'apprentices.'[4] There is no evidence, however, that the need for quick training during the war emergency had resulted in an expansion of regular apprenticeship. An increase from 84,000 to 200,000 within two years is so unlikely that the Apprentice-Training Service estimate must have included many wartime learnerships. Significantly enough, in 1942 only 45,000 apprentices, employed in about 5,000 firms and covered by 2,304 agreements, were actually registered with the Service as conforming to the standards recommended by the Federal Committee on Apprenticeship. As the war progressed, the number of bona fide apprentices showed a drastic decline, reflected in the appallingly low figure of only 16,000 registered apprentices at the end of hostilities.

It is true that many small firms that employ apprentices may not have registered with the apprenticeship authorities. The development of apprenticeship systems independent of federal administration is noted in an American Iron and Steel Institute survey of 28 firms employing 500,000 workers. The information gathered in connection with this survey seems to indicate that the apprentice training programs generally employed in the iron and steel industry involves much more than the minimum of 4,000 hours of em-

[3] This figure does not include some 8,000 unemployed apprentices.

[4] U.S. Apprentice-Training Service, *Apprentice Training for America's Youth* (Washington, 1943), p. 1.

ployment, but that only 50 per cent of the programs include supplemental educational courses. Where such educational courses are included, they involve 144 to 200 hours of classroom instruction per year. Only about 40 per cent of the companies require formal contracts with all of their apprentices, and an additional 10 per cent provide contracts only for special trade groups. The written agreements, however, usually do not embody definite schedules of work assignments. The progressively increasing scale of wages, at levels generally well above the federal standards, appears to be typical of the steel company programs. It does not appear to have been general practice among steel companies to seek approval of their training programs by their respective employees' bargaining agencies; and only 1 in 28 has had the approval of the Federal Committee on Apprenticeship.[5]

An analysis of the 45,000 apprentices registered in 1942 shows that they were concentrated mainly in California (7,088), Illinois (2,925), Michigan (6,845), New York (2,069), Ohio (3,600), Washington (1,952), and Wisconsin (3,593). As for the industrial distribution, 33,000 of the 45,000 were in the machine and metal industries—three times as many as in all other industries combined. This was, of course, a reflection of the enormous expansion of armament manufacture.

The insignificant number of apprentices in the labor force as a whole is emphasized in the following trade-by-trade analysis showing the development over two decades.[6] The number of apprentices

	1920	*1930*	*1940*
Carpenters	4,805	4,138	7,428
Electricians	9,562	4,611	3,430
Machinists	39,463	13,606	14,198
Plumbers	7,386	5,937	5,311
Other bldg. & hand trades	12,737	11,841	14,161
Printing	11,603	10,928	10,020

[5] American Iron and Steel Institute, *Practices Relating to Apprentice-Training Programs in the Iron and Steel Industry*, ed. by Grover C. Brown (New York, 1941).

[6] For the development of apprenticeship as a whole, *see* figures in Ch.

in carpentry has remained fairly stable The high number of electrician and machinist apprentices in 1920 was probably a result of the immediately preceding war years, while the low figure for electricians and plumber apprentices in 1940 reflected the depression in the building trades. The printing industry, despite its comparatively extensive apprenticeship system, also showed a smaller number in 1940 than in either 1930 or 1920.

The apprentice-journeyman ratio is correspondingly low, as shown by the following figures on several major trades in 1940.[7]

	Apprentices	*Journeymen*	*Ratio*
Carpenters	7,428	766,213	1:103
Electricians	3,430	227,102	1:66
Machinists	14,198	521,093	1:37
Plumbers	5,311	210,815	1:140
Printers	10,020	240,881	1:24

Assuming that twenty-eight years is the average tenure for a worker in a trade (allowing for dropouts due to change in trade, advancements, or natural causes) and that four years is the average for apprenticeship, the ratio of apprentices to journeymen should be 1:7. In each of the trades cited above it is considerably lower, carpenters and plumbers showing the greatest discrepancy. Even the printing industry, which has the most satisfactory ratio, could absorb three times as many apprentices without causing an oversupply of skilled labor. The ratio given for machinists may be misleading, since apprentices in this trade have to replace not only journeymen machinists but also most of the mechanics, who numbered nearly a million in the 1940 census. It is clearly apparent that apprenticeship does not yet play a measurable role in any trade with the possible exception of printing.

The concentration of apprenticeship programs in large enterprises is typified by conditions in the machine and metal industry

I. Figures for 1920 and 1930 taken from Fifteenth Census of the United States, 1930, *Population*, vol. 5 (Washington, 1933), p. 40; figures for 1940 were taken from *Statistical Abstract of the United States*, 1946, p. 183, and refer to both employed and unemployed apprentices.

[7] *Statistical Abstract* . . . 1946, p. 183.

in 1943, summarized in the following figures.[8] Just two large businesses employ, between them, 5,600 or 20 per cent of all apprentices listed in this table. On the basis of the ratios of apprentices to journeymen, it can be presumed that enterprises with more than 10 apprentices are those employing at least several hundred workers each. This would imply that more than two-thirds of the apprentices in the machine and metal industry are employed by such large companies. In this country, therefore, small shops do not play nearly so important a role in the training of apprentices as they do in most European countries, although it must be kept in mind that the figures refer only to registered apprentices, and that apprentices in small shops are registered less often than those in the large enterprises.

No. of apprentices per enterprise	*No. of enterprises*	*Total apprentices in group*
1 to 3	3,506	4,069
4 to 10	773	4,959
11 to 25	240	2,422
26 to 100	109	5,615
101 to 500	27	4,717
501 to 1,000	1	631
Over 1,000	2	5,600
TOTAL	4,658	28,719

From the foregoing account it may be concluded that the Fitzgerald Act has not yet had full effect. It has contributed to the standardization of apprenticeship regulations and to the further organization of apprenticeship without, however, having extended its scope beyond more than approximately half of all apprentices. It has not markedly affected the number of apprentices. In the prewar and war years it was applied under conditions that cannot be considered normal, and it would be premature, therefore, to pronounce the legislation ineffectual.

[8] Compiled from U.S. War Manpower Commission, *Apprenticeship Systems in the United States* . . . May 1943 (FCA-192·042443).

Postwar Developments

As a result of the rather special postwar conditions, systematic in-employment training is experiencing an expansion that may well alter the face of American industrial training. The prevailing high level of production and employment has made employers eager to secure a well-trained labor force. At the same time, millions of young men, recently discharged from the armed services and intent on planning their business careers, recognize the advisability of acquiring further education or training along lines that will insure their orderly advancement. These two factors alone would have resulted in increased attendance in schools and colleges and in an expansion of apprenticeship and other forms of occupational training. But veterans are further encouraged to return to school or to enter into some industrial training arrangement by the provisions of the GI Bill of Rights, which grants them federal subsidies of $65 to $90 a month for varying periods of time while they are so engaged.

In order that a veteran trainee may receive these federal benefits in addition to regular payments from his employer, it is necessary that he be certified as eligible by the Veterans Administration and that his employer offer a training program acceptable to the state authorities. In the case of an apprenticeship this usually means that the employer agrees to conduct a program of training corresponding to the general standards formulated by the various joint apprentice committees.

The marked effect of this legislation is indicated by the rapid increase in the number of apprenticeship trade programs registered with the Apprentice-Training Service. By the end of May 1947, in the building trades alone these programs covered 51,513 establishments.[9] Apprenticeship programs are, of course, not the separate formal agreements between employer and apprentice, but only sets of rules under which either an individual employer or an

[9] U.S. Apprentice-Training Service, *Monthly Report on Apprenticeship Programs in the Building Trades* (FCA-1511:050847).

entire trade or industry may hire apprentices. The actual number of apprentices at any given time can only be estimated, since statistics are available only for certain groups.

For the building trades, the Apprentice-Training Service reported 98,126 employed apprentices, as of 30 April 1947. This figure included registered as well as nonregistered apprentices and was broken down for the separate trades as shown by the figures below.[10]

Trowel trades	12,611
Woodworking trades	36,241
Painting & related trades	7,741
Pipe trades	14,980
Electrical trades	15,397
Sheet metal trades	7,312
Other building trades	3,844

The number of apprentices in all trades registered with the Apprentice-Training Service at the end of April 1947 was reported to be 133,369.[11] The total at this time, therefore, was probably not much below 200,000.

The large proportion of veterans among apprentices may be seen in selected New York State figures. Of 5,480 apprentices in the building trades at the end of June 1946, 4,737 were veterans, and of 2,153 in the printing trades, 1,612 were veterans. The total reported for other trades was 3,507, of whom 2,957 were veterans. For the country as a whole the Washington office of the Apprentice-Training Service reported that 90 per cent of the new apprentices were veterans. In view of the fact that a large proportion of the particular age group involved would necessarily have been members of the armed forces this percentage is not too startling.

Federal subsidies, however, are not restricted to veterans serving regular apprenticeships. They are also granted for other forms

[10] U.S. Apprentice-Training Service, *Building Trade Apprentices in Employment* (FCA-1533).

[11] U.S. Apprentice-Training Service, *Apprentice Registration Actions Reported by Type of Action and State* (FCA-1252).

of approved training on the job. The jobs to be learned in such programs are not in the apprenticeable trades but 'run the gamut from a shoe salesman to first vice-president of a large corporation.' The majority of on-the-job training programs cover white-collar jobs such as 'clerk, salesman, installation-service-repairman, beautician, traffic agent, inspector, assistant agency manager, teller, and district manager.'[12] Under these programs the veteran trainee receives the industrial wage rate usual for the work he is doing, plus a subsistence allowance from the federal government. Total receipts, however, are not supposed to exceed $175 a month for a single, and $200 for a married, veteran, as is also the case in the apprentice training programs.

The official attitude of the states toward these training programs is indicated by the following pronouncement of the New York Labor Department: 'It is the aim of the Labor Department to see that official approval is granted to the greatest possible number of On-the-Job Training Programs, for such programs mean job opportunities and jobs, in turn, mean security to industry, business, and veterans alike.'[13] An appraisal of the true value of these programs, however, is not yet possible. Neither the aggregate number nor the quality of training which will develop under this system can be prophesied.

The situation in the field of apprenticeship is somewhat different since there exists a well-developed organization of federal and state authorities and of joint apprenticeship committees representing management and labor, all of whom have a clear view of their goals. With the cooperation of all these agencies in the effort to absorb increasing numbers of veterans into apprenticeships, the system may be expanded to proportions that would correspond with the size of the skilled labor force.

[12] *Industrial Bulletin* (February 1946), p. 4.
[13] Ibid. p. 3.

XI

Apprenticeship Programs and Standards

Apprenticeable Trades

INASMUCH as trades originate, develop, change their content continuously, and even expire, as a result of technological change, the concept of an apprenticeable trade cannot be rigidly maintained nor can it be determined by purely rational processes. Trades such as those of the blacksmith, sheet metal worker, or plumber, were in existence long before steam, and electric and gas power were introduced; those of tool and diemakers, jig builders, heat treaters, boilermakers, millwrights, and others, flourished after steam power began to play an important role in production, and an entirely new group of apprenticeable trades was created with the introduction of power-generation and electrically driven machines and gas engines. Thus there are now special mechanics for aircraft, automobiles, Diesel engines, oil burners, and refrigeration, and there are special electricians for outside and inside work, voice, sound, vision, and transmission.

As a result of this development, many modern apprenticeable trades now exist side by side with those old trades that have survived despite changes in the techniques and knowledge required. The fact that certain older trades were formerly regarded as apprenticeable, but are now considered merely skilled occupations, may be explained in part by the great difficulty of operating the earlier machines or the more complicated hand operations required for the production process. On the other hand, new skilled occupations have sprung up, some of which are likely to broaden into apprenticeable trades. The craft of the metal polisher, for instance, is gradually being replaced by the more modern and ef-

ficient methods of metal plating, which has recently developed into an apprenticeable trade in the electrochemical field.

In an effort to clarify this rather complex situation, the Apprentice-Training Service published in 1943 a revised list of about 120 apprenticeable trades.[1] Among 46 in the machine and metal industry are those of diemakers, diesinkers, draftsmen, machinists, nine different types of mechanics, three types of model makers, pipefitters, plumbers, shipfitters and shipwrights, steamfitters, tool and jig builders, and toolmakers. Fully aware of the variability in the field, the Service foresees changes in this list, as evidence is found to warrant additions or deletions.

The trades as taught in vocational high schools are, in general, broader in scope than those listed by the Service as apprenticeable, a situation justified by the fact that this instruction, in order to conform to the purpose of in-school education and training, has to be broadly basic. The Service, however, in listing the apprenticeable trades, had to take other factors into consideration. While the work processes to be learned had to be sufficiently diversified to develop all-round skills and flexibility over a wide range of employment opportunities, it was also essential that they should not cover too broad a field to be learned within a reasonable period of time. In addition, the Service had to take into account the lines along which the craft-oriented trade unions are organized, since the successful expansion of apprenticeship depends to a great extent on union cooperation and must therefore recognize traditional union rules, structure, and jurisdictional areas.

An examination of the apprentice programs and standards in the machine and metal trades, as they have been developed according to the provisions of the Fitzgerald Act, will serve to indicate the character of apprenticeship in this country and the status of young workers employed under apprentice agreements. Consideration will be given to certain basic factors of all apprenticeship programs: namely, selection of apprentices; term of apprentice-

[1] U.S. Apprentice-Training Service, *The National Apprenticeship Program* (Washington, 1943), p. 6.

ship; working schedules; related school instruction, compensation; and restriction of apprenticeships.

Selection of Apprentices

In view of their long association with an enterprise, and of the rigorous demands of work and training, intelligent and careful selection of apprentices is of primary importance. Items to be taken into account in choosing apprentices are suggested by the topics investigated by the Murray Corporation of America (Detroit): interest and inclination for the trade; ability to learn; previous education and training in the trade; work and general attitude; future possibilities, reliability, and strength of purpose; personality, appearance, poise, and ability to get along with people. Distinction along these lines, however, is prerequisite to success in any career and is not peculiar to apprenticeship.

More concrete standards of selection are based on age, education, physical fitness, American citizenship, and good moral character. In some cases, preference is given to single men, local residents, or children of workers employed in the industry.[2] For example, one contract openly states that 'preferences will be given to sons of employees in the selection of apprentices to the extent of at least eighty (80) per cent of the number employed.'[3] But, in general, the preference accorded candidates on such grounds is tacit rather than avowed.

The minimum age for entering upon an apprenticeship depends on the school-leaving age in the state in which the agreement is made. It is usually between sixteen and eighteen, with the maximum in the early twenties, though occasionally no top limit is set. In actual practice, the age limit is not so rigid as the specifications suggest. In boom times, when the supply of eligible apprentices is small, the restrictions on age are relaxed, while during periods of economic depression the rules are more strictly enforced. Moreover,

[2] Ibid. p. 4.

[3] Elias Lieberman, *The Collective Labor Agreement* (New York, 1939), p. 55.

the agreements frequently allow apprenticeship committees to raise or to waive entirely the maximum age limit for persons with previous experience in the trade—for instance, those who entered the trade as helpers and subsequently decided to learn it by the more systematic means of apprenticeship. Some agreements specifically stipulate a higher age limit for such persons. During the war, high school youth of sixteen and seventeen were encouraged to become apprentices. To make the prospect more attractive, a system of interrelated credits for high school graduation of these apprentices was worked out jointly by the schools and the apprenticeship authorities. Such inducements, however, were promptly withdrawn at the end of the emergency, and efforts to keep youth in school took on renewed vigor.

High school education or its equivalent is referred to in nearly all apprenticeship standards, but with varying degrees of emphasis. The least exacting requirements term high school attendance 'desired but not necessary,' while others presuppose graduation. One of the standards assumes that 'the majority of applicants will have completed high school, but this is not to be construed against the applicant, with mechanical ability, who has been unable to complete high school, due to conditions beyond his control.' [4] Sperry Gyroscope Company is generous in its stipulations with regard to education, accepting in place of four years of high school a grammar school education plus two years of approved trade school education, or 'night school, tutoring, special instruction or such other educational background as shall be considered satisfactory.' [5] The other extreme is exemplified by the Murray Corporation of America, which requires high school graduation 'carrying above average scholastic standing.' There is scarcely any standard, however, in which vocational high school education is mentioned, which indicates how little weight it carries among those whom it would serve best and how loose is the connection between the two

[4] U.S. Labor Standards Division, *Machinists' Apprenticeship Standards . . .* (Washington, 1940), p. 6.

[5] U.S Labor Standards Division, *Apprenticeship Standards of the Sperry Gyroscope Company, Inc.* (Washington, 1940), p. 1.

main types of vocational training, which should be so closely linked.

As a safeguard against errors in judgment on the part of the company in selecting apprentices or on the part of apprentices in choosing a trade, each contract provides for a probationary period, during which the employer or the apprentice may terminate the contract without obligation, either by annulment or on request to the apprenticeship committee. In the machine and metal industry, the period is usually 6 months or 1,000 working hours, but it may be only half that long. Cancellation of the apprenticeship by the employer after the end of the probationary period is subject to the approval of the Federal Committee on Apprenticeship and is limited to such causes as failure to do satisfactory work or infractions of discipline. With regard to the apprentice who wishes to break the contract, it is unlikely that he would be forced to serve the full term against his will. But the sacrifice of the advantages to be derived from a completed apprenticeship is usually enough of a deterrent to any premature withdrawal from the contract on the part of the apprentice.

Apprenticeship Terms and Working Schedules

On the basis of all the considerations that shaped its choice of apprenticeable trades, the Apprentice-Training Service stipulated the number of years required for apprenticeship in each of these trades. The terms can be grouped as follows: 69 trades, 4 years; 16 trades, 3; 15 trades, 2; 15 trades, 5; 2 trades, 7; 1 trade, 2 or 3 (operating engineers); 1 trade, 2 or 4 (bookbinder); 1 trade, 4 or 5 (electrician, building); 1 trade, 5 or 6 (compositor).

In the machine and metal trades the prevailing term of 4 years applies to all 9 types of mechanics and the 3 types of model makers, the boilermakers, machinists, sheetmetal workers, shipfitters and shipwrights, toolmakers, and tool and jig builders. The exceptionally long term of 7 years is required only for diesinkers, while patternmakers (metal), pipefitters, and steamfitters are required

to serve 5 years. Very few trades in the machine and metal industry are listed as requiring less than 4 years; metal platers are put down for 3 and metal fitters (aircraft) for 2.

In local and plant agreements the terms of apprenticeship are expressed in years or hours. In the standards, 1,900 to 2,250 hours—or an average of 2,000 hours—are figured as being equal to a year. The currently more frequent stipulation in hours is to the advantage of the apprentice who, if he works overtime, can then finish his term in less time than if it were expressed in years. The situation is, of course, reversed if the apprentice is laid off for a time during his term. The standards of apprenticeship sometimes specify the right of 'promoting an apprentice . . . in less than four years when such promotion is merited on account of outstanding ability or experience.' [6] Credit granted for work experience in the same trade prior to regular apprenticeship may also shorten the term.

One of the main problems in establishing the scope of an apprenticeable trade and the length of the period of training is the choice of the number and kinds of operations and processes to be included and their arrangement in working schedules. Every apprenticeship program has a more or less elaborate working schedule, indicating the subjects which must be covered in shop practice and the time to be spent on each. Study of a number of apprentice standards, however, reveals that the working schedules differ not only among the trades but also substantially within the individual trades, and they differ not so much in respect to the subjects covered as in the time distribution and sometimes even the length of the whole term of apprenticeship.

Although the apprenticeable trades for the most part have been built up on a trade, and not an industrial, basis, the type of production in the industry concerned determines the importance

[6] U.S. Labor Standards Division, *Report on Apprenticeship System of American Airlines, Inc.*, by Oswald L. Harvey, Technical Bulletin No. 4 (Washington), p. 7.

given to each of the operations and therefore the arrangement of the training program. For example, the schedule for a machinist apprentice in the automobile industry is quite different from that for one in the textile machine industry, although it is quite true that with brief additional training, a machinist trained in one industry should be able to apply his skill in another, since the basic operations and problems are essentially the same.

Other differences in standards are due to the size of the enterprise. Training schedules in a large, modern plant differ from those of small shops which have only limited machinery setups for all-round purposes. And still another source of differences in schedules is the variety of opinions among apprenticeship committees with regard to the emphasis, both of time and sequence, to be accorded the subjects covered. There are also specific working conditions and many production processes requiring unique knowledge and skills for which special training schedules for an individual enterprise may have to be drawn up. And one company goes so far as to state that 'so varied are the particular characteristics of each apprentice, indeed, it may be said that each schedule of work progress has to be tailor made.'

Just how the varying conceptions of adequate trade training for apprentices are translated into practice may be demonstrated by examples of working schedules for machinists, one of the most widely distributed occupations within the machine and metal trades. The term 'machinist' may be interpreted in two ways: one refers to the machinist whose main work is in the machine shop; the other to the machinist whose chief job is assembling, fitting, and repairing, or, in general, bench and floor work. Both types belong to one and the same apprenticeable trade, with the center of gravity shifted according to the needs of the plant and the special branch of work chosen by the apprentice.

In only one of the programs studied was the usual 4-year term for the machinist apprentice shortened to 6,000 hours or approximately 3 years. In addition to the term length, almost all the programs had one other feature in common—the assignment of a very

substantial part of the training to work on the engine lathe. Indeed, the engine lathe is probably the most universally used machine and its operation is difficult and complex.[7]

The difference between average programs and those that are either more flexible or more schematic can best be clarified by a comparison of actual work schedules. Probably the best examples of an average training program for machinist apprenticeship are offered by the standards prepared by the local committees of Houston, Texas, and Memphis, Tennessee.[8] These are not intended for specific enterprises but are designed to suggest working schedules for apprentices in those particular areas. The number of months allotted to various work processes by the two programs is shown below. Both standards contain special clauses warning against too rigid adherence to the amount of time suggested for

	Memphis	*Houston*
Preliminary: assisting in toolroom for acquiring names and uses of hand tools, hack sawing, etc.	1–3	1–3
Drill press, single spindle & radial	1–3	2–3
Engine lathe	9–11	8–10
Turret lathe & screw machine	—	3–5
Planer	2–4	2–4
Shaper and slotter	2–4	3–5
Universal milling machine & vertical milling machine	7–9	4–6
Boring mills, horizontal & vertical	3–5	3–6
Grinding machines—external, internal, & surface grinding	1–3	—
Tool forming, toolmaking, heat treating	1–3	—
Layout	2–4	2–4
Erection floor & bench work	2–4	2–4
Electric & oxyacetylene welding	1–3	3–5
Dismantling and erection in commercial work, etc.	3–5	—

[7] In other countries, lathe hand is treated as an apprenticeable trade.

[8] U.S. Labor Statistics Division, *Houston, Texas, Machinists' Apprenticeship Standards* . . (Washington, 1940) and *Memphis, Tennessee, Machinists' Apprenticeship Standards* . . (Washington, 1941).

each of the machines and both concede the necessity for changes in the schedules to suit special enterprises.[9]

For the most part, the programs coincide with regard to subjects included and they are fairly similar in distribution of time. Each program, however, contains subjects that are not included in the other. Memphis, for example, does not include the turret lathe, the operation of which may be learned in a short time, but which presents difficult problems of work setup, maintenance, and repair. Houston omits any reference to grinding, a skilled occupation and an integral part of almost every machinist apprentice's training. Memphis enlarges its program by the inclusion of dismantling and erection in commercial work and, also in contrast to Houston, allots 1 to 3 months to tool forming, toolmaking, and heat treating, the last of which is itself an apprenticeable trade; not more than a smattering of the basic elements of this most complicated of all machinist subjects could be given in so short a period. The time differences for training on milling machines, a subject included in both programs, may well be the result of the character of the local industries and the extent to which these machines are used.

The program of the Bath (Maine) Iron Works Corporation is representative of those schedules distinguished by their flexibility. It provides that for the first 500 hours the apprentice shall act as a helper on different jobs on the floor, bench, and machines. Thereafter he is to be assigned to the machines for small work, such as drilling, milling, shaping, and small lathe work. At the end of 1,000 hours he is to be allowed to operate machines independently and is to be given a variety of work with increasing responsibility. At some time during his apprenticeship he is to be assigned to the drawing room. Beyond this outline all other details of the working schedule are left to the discretion of the employer and the apprentice supervisor.

Another example of flexibility is the program of the Manitowoc (Wisconsin) Shipbuilding Company. This allots 3 to 6 months to

[9] Most agreements contain similar clauses.

both toolroom attendance and bolt cutter and drill press; 3 to 8 months to miscellaneous work, repairs and the like; and 12 months each to lathes and boring mills; shapers, planers, and milling machines; assembling, erecting, bench work, and layout work material; and inspecting and drafting. The program makes it clear that the processes are not 'necessarily to be taught in the order listed, nor will all the time on a single process necessarily be continuous. Furthermore, other processes intended to improve the quality of the apprentice in his trade may be added, if deemed desirable.'

The working schedule of the Griscom Russell Company, Inc., of Massillon, Ohio, exemplifies the highly schematic type. It divides apprenticeship into eight 6-month periods, each devoted to a special machine or group of operations—namely, drill press, engine lathe, horizontal boring machine, vertical turret lathe, small milling machine, horizontal turret lathe, planer, and tool room and (erection) assembly.

The programs of Lockhead Aircraft, Vultee Aircraft, and Sperry Gyroscope Company are also carefully planned in all details (Table 8). The Lockheed program places major emphasis on engine lathes, milling machines, and bench work, these three subjects together accounting for almost 45 per cent of the instruction time. The Vultee program is divided into two 4,000-hour periods, the first consisting more or less of training in operations, while the major part of the second is occupied with advanced machine training. The latter probably includes the more difficult branches, especially engine lathes, which are given only 600 training hours in the first period. At first glance, the Sperry program appears to be less typical of machinist training than the other two, but if the time on turning and on the engine lathe is combined, the importance of the training on this machine assumes its proper place. The greater emphasis laid on milling and profiling is probably demanded by the nature of the product.

The standards of very large enterprises that train machinists are

TABLE 8. DISTRIBUTION OF TRAINING TIME FOR MACHINIST APPRENTICES IN THREE LARGE INDUSTRIAL PLANTS, BY TYPE OF OPERATION

LOCKHEED AIRCRAFT[a]		VULTEE AIRCRAFT[b]		SPERRY GYROSCOPE CO.[c]	
Operation	*Hours*	*Operation*	*Hours*	*Operation*	*Hours*
Bench hand	300	*First 4,000-hour period:*		Misc. (incl. shaper)	320(320)
Drill presses	500	Drill press	350	Drill press	640(160)
Turret lathe	500	Engine lathes	600	Turning (all types)	800(800)
		Turret lathes	250		
Engine lathes	1,800	Milling machines	600	Bench lathe	480
Milling machine	1,000	Planer	250	Hand screw mach. or turret lathe	640
Planer	300	Shaper	250	Precision grinding	1,120(320)
		Tool grinding	250		
Shaper	500	Precision grinding	500	Engine lathe	480
Turret lathe job setter	500	Heat treatment	250	Milling & profiling	1,280(480)
Precision grinding	200	Bench layout	350	Engraving	160
		Inspection	350	Gear cutting	160
Tool grinding	700			Aeronautical assembly	480
Inspection	200	*Second 4,000-hour period:*		Other assembly	640
Bench machinist	1,000	Welding	800		
		Advanced machine trg.	2,250	Tool room	320
Special work[d]	320	Office system	150	Inspection	320
Miscellaneous[e]	500	Misc. assignments	800	Review	160(160)
TOTAL	8,320	TOTAL	8,000	TOTAL	8,000

[a] U.S. Labor Standards Division, *Lockheed Aircraft Apprenticeship Program*, 1939, p. 5.

[b] U.S. Labor Standards Division, *Apprenticeship Standards for Vultee Aircraft, Inc., Nashville Division, Nashville, Tenn.*, 1941, p. 4.

[c] U.S. Labor Standards Division, *Apprenticeship Standards of Sperry Gyroscope Company, Inc.*, 1940, p. 2. Figures in parentheses indicate training in apprentice shop.

[d] Production office, tabulating operation sheets, office system in department.

[e] These remaining hours may be spent on any or all of the above operations, depending on business conditions and the ability of the apprentice.

differentiated among themselves and serve to distinguish the several types of machinist. The Ford Motor Company, for example, has the following different work schedules for three kinds of machinist: [10]

(1) Machine repairmen and machinists: shaper, planer, slotter, 1,000 hours; engine lathe, 1,000; milling machine, 1,000; grinding, 1,000; optional, 1,000; bench and floor, 3,000.

(2) Locomotive machinists: locomotive repair, 1,433 hours; crane repair, 1,000; shaper, planer, slotter, 1,000; lathe, 1,000; milling, 900; grinders, 667; pump shop, 1,000; speed reducers, 1,000.

(3) Airframe machinist: lathe, 2,400 hours; milling, 1,300, drill work, 500; grinder, 1,000; bench, 500; heat treating, 300.

Lathe, milling machine, and grinding occur in each of the types, but with special emphasis in the program for the airframe machinists. For the machine repairmen and machinists, bench work is stressed, while all other activities are divided into periods of equal length. The schedule for the locomotive machinists only partially reveals the operations involved; locomotive repair probably includes considerable bench and assembly work, and the same may be true for crane repair. The airframe machinist, trained for only 6,000 hours, in contrast to the 8,000 required for each of the other machinists, emerges as a specialist but with good all-round training except in bench or layout work.

The Tennessee Valley Authority also trains two types of machinist apprentices: construction machinists and gas-Diesel machinists. Both training schedules provide for comparatively little machine shop work, but accord more emphasis to assembling, dismantling, and repair. The Diesel machinists spend no less than 5,000 of their 7,000 hours on gas-Diesel equipment, and only 1,000 on machine shop.[11]

The extent to which working schedules for mechanics may differ from those for traditional machinists is shown in the Ameri-

[10] Ford Motor Co. and UAW-CIO, *Apprenticeship Standards* (Dearborn, Mich., 1943), pp. 7, 8, 18.

[11] U.S. Apprentice-Training Service, *Report on Apprentice-Training Program of the Tennessee Valley Authority* (Washington, 1942), Appendix S.

can Airlines' three-year training program for an airline mechanic apprentice, which is arranged as follows: [12]

(1) Approximately 15 months for line service and line maintenance (line servicing ships—cleaning; spark plug reconditioning; daily major engine and propeller checks; general engine repairs; landing gear major checks; hydraulic systems; general airline repairs; trouble-shooting; servicing de-icer, heating, ventilating systems; instrument and electrical checks and service; accessory and engineering changes).

(2) Approximately 9 months for engine, propeller, and accessory overhaul (engine disassembly—cleaning; cylinder and piston work; clowers and reduction gears; crankshafts and bearings; final assembly—timing-test stand; propellers; mechanical accessories; electrical accessories).

(3) Approximately 10 months for airplane overhaul (metal structure and general metal repairs; interior and unit refinishing and repairs; hydraulic systems—cleaning, control and cable systems; miscellaneous assembly; electrical systems; general repairs; engineering changes).

(4) Approximately 2 months for instrument overhaul (handling and packing of instruments, parts, etc.; general care of shop instrument systems; engine instruments; flight instruments).

Auto mechanics have somewhat less crowded working schedules, as is indicated by the St. Paul, Minnesota, apprenticeship standards.[13] The subjects covered and the time distribution of the 8,320 hours is as follows: brakes, 750 hours; steering and front end system, 770; rear axle, 750; transmission and clutch, 1,500; motor, 2,000; tune-up and electrical (ignition, battery, starter, lights, generator, carburation), 2,000; miscellaneous (springs, frame, rattles, soldering, welding), 550.

It is obvious that training for both types of mechanics is concentrated on the mechanics and functioning of the machinery to be

[12] U.S. Labor Standards Division, *Report on Apprenticeship System . . .* (cited above), Exhibit D.

[13] U.S. Labor Standards Division, *St. Paul, Minnesota, Automobile Mechanics Apprenticeship Standards* (Washington, 1942), p. 2.

served and to a lesser degree on operational skills. Good technical instruction is therefore essential for the success of these training programs.

The following working schedule, based on standards for a five-year plumber's apprenticeship drawn up by the Seattle Joint Apprenticeship Committee, is an example of a detailed outline of the work to be done, in which, however, no indication is given of the amount of time to be spent on learning the various operations. The subjects include: installation of piping for waste, soil, sewerage, vent and leader lines; installations of piping for hot and cold water for domestic purposes; installation of lead pipe, tin pipe, wiped joints, sheet lead, and solder work; assembly in position and connection of fixtures and appliances used in the plumbing and drainage systems; welding connected with the trade, maintenance and repair of plumbing; operation, care, and use of all tools connected with the trade; operation and maintenance of the complete repair service and kit; safety as applied on the job, and local and state laws as applicable to work.[14]

There is little point in analyzing thoroughly and critically the programs cited here; their value lies more in the way they are executed than in the outline of subjects included and the time to be spent on each. But the impression given by most of the programs is that the apprenticeship committees are more concerned with including work on every type of machinery than with giving thorough training on those machines that can be operated only by highly skilled workers. The drill press, shaper, and slotter, for example, are usually run by an operative and could therefore be given less emphasis in apprenticeship schedules, while bench and lathe work could be taught more extensively. The task of apprenticeship is, of course, to provide broad knowledge of the operation of the various machines, but it must not overlook the importance of a complete understanding of some of the machines by which the most difficult and diversified work is done.

[14] U.S. Labor Standards Division, *Seattle Plumbing Apprenticeship Standards* (Washington, 1940), p. 2.

Related School Instruction

Whereas schools are well equipped to provide technical instruction related to a trade, but less well equipped for teaching operational skills, the reverse is true of the plants that offer apprentice training. Supplementary classroom instruction in apprentice training has therefore long been recognized as essential. In the days when apprenticeship started at the age of fourteen, after eight or even fewer years of grammar school, the classroom instruction was intended to improve the apprentice's knowledge of such basic subjects as English and arithmetic. Today, however, basic knowledge of these subjects can be largely taken for granted, and the greater part of supplementary classroom instruction need be devoted only to the related technical subjects that have become so important for most trades.

The subjects currently taught fall into two main categories. One is fairly general, comprising blueprint reading, drafting, shop mathematics, and safety regulations, business English (correspondence, minutes of meetings, and reports on job progress). In the other group, the subjects are more closely related to the trade and are planned separately for each occupation. In addition to technical instruction in the narrower sense, they often include some shop instruction aimed at teaching special work processes and the use of special machinery. This part of the instruction is particularly valuable for apprentices in small shops for whom there may be no other opportunity of becoming informed on advanced production methods.

Almost all apprentice standards formulated under the Fitzgerald Act provide for a minimum of 144 hours a year, or about 4 hours a week on the basis of a 38-week school year, to be spent in school. A few standards require 200 hours, while others suggest that school attendance be required only in the first three years of apprenticeship.

The government has promoted related instruction in apprentice training, not only by making provision for it in standards but also

by providing financial aid within the framework of the Smith-Hughes Act. In 1940, 62,419 of the 84,000 employed apprentices enumerated by the census—or about 75 per cent—were enrolled in federally aided public vocational high school classes for apprentices.

The introduction of special apprentice classes into the vocational high school system marked the beginning of a program of cooperation between educational authorities and agencies and those responsible for apprentice training. A number of apprenticeship agreements now advise the local and plant apprenticeship committees to arrange with local vocational education authorities for special apprentice classes. Such cooperation is also in evidence at the state level, the Connecticut State Apprenticeship Council, for instance, reports that 'arrangements have been made through the Secretary of the Council and the State and local departments of Education to provide this related instruction. This entailed a complete canvass of all of the local boards of education in communities where approved programs were in existence. In contacting each board of education, the program of the State Council was explained and the assistance and cooperation of the local school authorities was enlisted. Schools were then designated in each community to handle this related instruction.'[15] The New York State Apprenticeship Council has established a similar relationship.

Corporations training groups of apprentices large enough to warrant the establishment of classes of their own frequently make independent arrangements with the local education authorities, which permit plant personnel to instruct apprentices on a part-time basis and to be paid out of Smith-Hughes funds.

Another means of providing related instruction is the union trade school, an example of which is the one operated by Local 3 of the International Brotherhood of Electrical Workers in New York City. But even this school leans heavily on the public school system, with which it has arranged for related instruction of ap-

[15] U.S. Labor Statistics Division, *Report on the State Apprenticeship System in Connecticut* (Washington, 1941), p. 16.

prentices at Stuyvesant High School, thus bringing this aspect of its apprentice-training program within the jurisdiction of the Board of Education of the City of New York.

The courses of the International Correspondence Schools are also often used in apprentice schools. Where regular schools are not easily available for related instruction, enrollment in the ICS courses may even be substituted for school attendance. This institution has played an important role in providing related technical instruction and its influence should by no means be minimized, though it can be assumed that with the expansion and improvement of vocational high school education the need for correspondence courses is likely to lessen.

The cost of related instruction is seldom borne by the apprentices. It is generally covered either by public funds or by employers.

COMPENSATION

Unlike the apprentices in Europe, apprentices in this country are not expected to consider the opportunity to learn a trade their main compensation for the labor they contribute. Boys of eighteen —the average age at which apprenticeship is entered upon here— are physically and mentally mature, and capable of working at full capacity. They are therefore held to be workers rather than students, and, as such, entitled to remuneration almost as great as that of other workers of their age.

This acknowledgment is expressed in the standards of the National Apprenticeship Program, which provides for 'a progressively increasing scale of wages for apprentices that should average approximately 50 per cent of the journeyman's rate over the period of apprenticeship.' [10] In accordance with this stipulation, wages are usually below 50 per cent at the start and above 50 per cent at the end of the apprenticeship term. Individual contracts may define the apprentice wages either in terms of percentages of jour-

[10] U.S. Apprentice-Training Service, *The National Apprenticeship Program* (cited above), p. 2.

neymen's wages or in absolute amounts, that is, cents per hour. The following examples of both methods illustrate their application. They are, however, representative only of registered apprentice agreements arrived at by collective bargaining. When agreements are made with shops that are neither registered nor unionized, the apprentice wage scales may be lower.

The national standards for apprenticeship in the electrical construction industry deal with the wage problem in rather general terms, stipulating that in the first years the wages should be low, but not less than 25 per cent, and in the last two years, high enough to average at least 50 per cent, of a journeyman's wage for the whole period.

In other agreements the wages are expressed partly in cent values and partly in percentages of journeymen's wages. Thus the Lockheed Aircraft Corporation agreement sets its wage scale partly in terms of journeymen's wages and partly in cent values; the starting wage is not less than 30 per cent of the journeyman's or senior mechanic's rate and increases 6 cents per hour every 6 months. The reverse policy is followed by the Pattern Makers' Standards of Chicago. Here the scale is given in terms of cents per hour for the first 18 months and in terms of an ascending percentage of the journeyman's wage rate for the next 2½ years, each increase occurring after a 6-month period.

The diemakers and sinkers who serve a seven-year apprenticeship have an exceptionally liberal wage scale. Diemaker apprentice wages range from 32 to 58 per cent of journeymen's wages, while for diesinkers the range is from 64 to 96 per cent, so that the latter, by the end of the term, are getting compensation almost equal to that of the journeymen.

Apprentice wage schedules for eight groups of enterprises may be compared in Table 9. Most of these standards were approved in 1940 or 1941 and may therefore have undergone considerable change since then, in line with the general trend of wage adjustments. For the most part, the wages for the first year of apprenticeship were less than those of an unskilled helper, while in the later

years they rose considerably, and in the last year, at least, were exceeded only by those of skilled workers.

Increases are usually on a semiannual basis, but some agreements provide for more frequent raises, especially during the first two years when the wages are relatively low. Most standards state that wage increases should not be automatic but that they should depend on the successful completion of examinations, that apprentices may be required to repeat certain parts of their training, and

TABLE 9. HOURLY WAGE SCALES FOR APPRENTICES (SIX-MONTH PERIODS OVER FOUR YEARS) IN REPRESENTATIVE INDUSTRY GROUPS, 1940–41 [a]

Industry Group	*1st*	*2nd*	*3rd*	*4th*	*5th*	*6th*	*7th*	*8th*
I [b]	$.30	$.35	$.40	$.45	$.50	$.55	$.65	$.75
II [c]	.40	.45	.50	.55	.60	.65	.70	.80
III [d]	.30	.35	.40	.45	.55	.60	.70	.80
IV [e]	.40–45 [f]	.50	.55	.60	.65	.70	.75	.80
V [g]	.50	.56	.62	.66	.70	.74	.80	.86
VI [h]	.42	.44	.46	.48	.51	.55	.60	.65
VII [i]	.30	.32	.35	.38	.41	.45	.50	.55
VIII [j]	.38	.45	.52	.59	.66	.73	.80	.87

[a] Enterprises operating under agreements with National Apprenticeship Program.

[b] Auto truck mechanics apprenticeship standards for truck mechanics of Philadelphia, approved in 1941.

[c] Manitowoc Shipbuilding Company, approved in 1941, Griscom-Russell Company, Massillon, Ohio, approved 1940; Vultee Aircraft, Nashville, Tenn., approved 1941.

[d] Memphis machinist standards, approved 1941.

[e] St. Paul auto mechanics standards; periods of increase are 1,040 hours instead of 1,000 hours.

[f] The lower figure applies for the first 500 hours (probationary period).

[g] Bath iron workers, approved 1941.

[h] American Airlines, Inc., approved 1941.

[i] Kearney & Trecker Corp., Allis, Wis., 1941.

[j] Seattle plumbers' apprentices.

that time lost by absence must be made up before transfer to the next higher wage bracket can be made. Some agreements also allow credit for previous experience in the trade. In these circumstances the term of apprenticeship is shortened and the apprentice starts

with the wages in the bracket commensurate with his advanced rating. These credits are not given indiscriminately, however, and in most instances are based on a proration of time.

Apprentices are frequently paid for the time spent in related classroom instruction, while in other cases they have to attend these classes without compensation. There are also instances in which half the related instruction time is paid for by the employer, while the apprentices attend without remuneration during the other half.

Apprentice-Journeyman Ratios

In each of the apprenticeship programs provision is made for the ratio of apprentices to journeymen according to the needs of the trade or of the individual enterprise. This is done in order to avoid overtraining in specific trades, with a resultant imbalance in the labor market, and to equalize the opportunities for work by eliminating undue competition between journeymen and apprentices. It is also necessary in order to guarantee adequate and proper training, which would be jeopardized by an excess of apprentices.

The regulations governing ratios vary considerably. In many cases they allow much latitude and their interpretation is left to the apprenticeship committee; thus at Vultee Aircraft and also at Sperry Gyroscope, the plant committees set the ratio on the recommendation of the factory or apprenticeship superintendents. The Ford Motor Company standards assign to the apprenticeship committee the task of working out a plan for the establishment of a suitable ratio to be mutually agreed upon by the company and the union. The national standards program for the electrical construction industry maintains that 'the ratio of apprentices to journeymen varies, but should be determined by collective bargaining.'[17]

There are also many instances in which ratios are prescribed. A

[17] U.S. Labor Standards Division, *National Apprenticeship Standards for the Electrical Construction Industry*, Bulletin No. 50 (Washington, 1942), p. 4.

flat 1:10 ratio is frequent, especially among machinist, tool and die-makers, and auto mechanics. There are also higher ratios. The mechanics agreement of American Airlines provides that the number of apprentices shall not exceed 30 per cent of the total number of chief mechanics, inspectors, lead mechanics, senior mechanics, and mechanics—in other words a ratio of 1:3.3. The Memphis and Houston committees for apprentice machinists have established a ratio of 1:5 and an additional apprentice for each shop. The Seattle plumbers' apprenticeship standards and those for the auto mechanic apprentices in St. Paul call for the same ratio; 4 apprentices, however, are the ceiling, and in the St. Paul standards it is also stipulated that enterprises with less than 3 mechanics or specialists may not hire an apprentice. A ratio of 1 apprentice per employer, plus 1 per 7 journeymen, is found in the machinist, tool and die-making standards of Philadelphia; 1 per employer, plus 1 per 8 journeymen, is introduced by the patternmakers of Chicago. At the Kearney & Trecker Corporation of West Allis, Wisconsin, 9 per cent of the men engaged in skilled trades are apprentices.

These individual ratios are, on the whole, not unfavorable to apprenticeship, indicating that the provisions contained in these agreements do not restrict apprenticeship unduly. The number of enterprises, however, which employ apprentices is very small. These few, therefore, would have to employ an excessive number, quite out of proportion to their training facilities and beyond the limits imposed by the ratios, in order to make up for the deficiency in the labor force as a whole.

Most of the standards contain provisions for proportionate reductions in the number of apprentices if it becomes necessary to reduce the number of journeymen in a plant. But provision is also made in many standards to protect apprentices against undue hardship in these circumstances, which involve not only the loss of employment but also a break in the continuity of the learning process. Arrangements are often made to transfer an apprentice to another company without interruption of training; other agreements foresee the maintenance of seniority rights in the event that the

apprentices are re-employed when the original number of journeymen is reinstated. These are moves in the right direction, since layoffs of apprentices require more consideration than those of other workers.

A more direct solution for all these problems may be found in the growing practice of organizing apprenticeship for a trade, as a whole, rather than for individual plants. Over-all ratios of apprenticeship to journeymen allow for greater flexibility; if one plant employs no apprentices, another may then be permitted to exceed the number stipulated for an enterprise of its size. The ultimate effect of this broader planning may well be an increase in the total number of apprentices, which would be highly desirable.

XII

Attitudes of Management and Labor toward Vocational Education and Training

Views on Apprenticeship

BECAUSE of its direct bearing on the supply of workers—especially, skilled workers—both management and labor have a stake in occupational training. Whereas management generally welcomes a vast, and therefore cheap, labor force, labor finds itself in a stronger position when the number of workers in a given trade is restricted. Throughout the nineteenth century these opposed interests repeatedly led to mutual accusations: employers complained of the restrictive influence of union policies on apprentice training, while unions accused employers of apprentice breeding and of using apprentices as cheap labor under the pretext of giving them all-round training. Nevertheless, both groups have always been in fundamental agreement that good apprentice training is highly desirable and that cause for complaint lies only in the abuse of the system or its undue restriction.

Reviewing the numerical development of apprenticeship during the last century, it is difficult to understand precisely what either group found to protest. Unions, it is true, insisted on apprentice-journeymen ratios, but as the industrial system developed, the actual number of apprentices fell consistently below the level permitted. That fact alone should have removed grounds for both management and union charges. Confronted with this paradox, Paul Douglas explains it by saying that union complaints were justified in part by local overcrowding in certain trades and that,

moreover, they were aimed at the increase of industrial child labor rather than at the number of bona fide apprentices.[1]

Obviously, some of the dying hand trades were bound to become overcrowded even without the entrance of many new trainees into the field, especially since immigration continuously furnished a great number of skilled workers for contracting as well as for expanding industries and trades. More generally, it must be remembered that American industry has moved in cycles. In times of depression and large-scale unemployment it is only natural that labor should consider any training activity excessive, no matter how limited it may be. On the other hand, in prosperous times employers have been quick to deplore the scarcity of skilled labor.

Despite the fact, however, that a preoccupation with economic considerations has always dominated the workers' stand on systematic in-employment training, labor has generally supported the idea of apprenticeship, and in recent years has cooperated actively in establishing apprentice standards. But this same concern with economic factors has caused labor to maintain an unfavorable attitude toward learnership, at least in the craft trades, since it considers this kind of training a mere dilution of skills and a threat to the standards set by apprenticeship programs.

Views on In-School Training

The attitude of management and labor toward in-school occupational training has usually been expressed on a different level. Successful individual manufacturers and businessmen, in establishing private trade schools for industrial education, gave concrete expression to their belief in the practical and educational value of manual training. With the steady decline of apprenticeship these schools became more and more numerous, a circumstance that aroused the concern of the unions who suspected these institutions of being sources of cheap and subservient labor. When, after 1900, the National Association of Manufacturers strongly supported the

[1] Paul H. Douglas, *American Apprenticeship and Industrial Education* (New York, 1921), p. 74.

expansion of privately financed and privately controlled trade schools, unions grew even more suspicious.

Organized labor's attitude toward industrial education, however, was never merely negative. Indeed, its partial obstructionism can be truly evaluated only in the light of its long and intense interest in an improved general education for the masses of the working force.

American labor has played an important role in the democratization of education since the 1830's. Its spokesmen, backing the movement for more and better schools, were among the most enthusiastic supporters of progressive education. Convinced that its expansion would prevent poverty, preserve the free institutions of the republic, maintain the natural equality of man, and generally raise the standard of living,[2] labor demanded educational reforms, competent teachers, a ladder system of free public schools, and school boards chosen by the people and responsible to them.[3]

During the early years of the last century, the agitation for the inclusion of manual training in education aroused no particular interest among the workers, they were far more concerned with the larger problems of general education. Nevertheless, certain labor groups endorsed manual training as a school subject and others recommended that young people be enabled to combine gainful work with continued study.

When the Morrill Act was passed in 1862 it was regarded by the Knights of Labor as a fine precedent for the extension of public aid to schools for mechanics.[4] This organization, which dominated the labor movement during the 1870's and 1880's, did not, however, pledge itself to the unqualified support of vocational and technical education. Like its predecessors, it was primarily concerned with general education and especially with the extension

[2] Horace M. Kallen, *Education, the Machine and the Worker* (New York, 1925), pp. 4–5.

[3] American Federation of Labor, *Report of the Proceedings of the 64th Annual Convention* . . . 1944, p. 219.

[4] Ellwood P. Cubberly, *Public Education in the United States* (New York, 1919), p. 280, Philip R. V. Curoe, *Educational Attitudes and Policies of Organized Labor in the United States* (New York, 1926), pp. 8–9, 14–21.

of school attendance. Nevertheless it supported the inclusion of practical training in school programs, and took a sympathetic interest in the revival of the manual training movement. But unlike other groups, it drew a sharp distinction between manual and vocational training, favoring the former for its development of the hands and arms, but opposing the latter as specific trade training that would disturb the labor market.[5]

The American Federation of Labor shared not only the Knights of Labor's enthusiasm for education and its fight for extended compulsory school attendance, but also its suspicion of the role of vocational training in schools. When, however, the industrial education movement got under way early in this century, labor felt the need to develop a firmer, more positive stand on the matter of vocational education. Accordingly, it evolved a philosophy shaped by two main considerations: on the educational side, by its conviction of the high value of education and of vocational education as the task of the public school, on the economic side, by the conviction of the need for our educational system to devise an equivalent for apprenticeship.[6] Its support of vocational education, however, was contingent on the continued maintenance of a 'fair and proper apportionment of the supply of labor power to the demand for labor power in every line of work.'[7]

For more than ten years, investigations were carried on by the committee on education of the AFL, and annual conventions repeatedly weighed the educational value of vocational education against the possible economic disadvantage to labor. From these studies and discussions there evolved a generally favorable attitude toward public vocational education. In 1910, the year in which the work of the National Society for the Promotion of Industrial Education began to arouse national attention, the AFL committee

[5] Curoe, op. cit. p. 280.

[6] American Federation of Labor, *Report of the Proceedings of the 29th Annual Convention* . . . 1911, p. 109.

[7] Samuel Gompers, 'The Attitude of the AFL toward Industrial Education,' an address before the National Society for the Promotion of Industrial Education, Richmond, Va., 10 December 1914.

crystallized its views on industrial education and was prepared to make concrete recommendations to the annual convention: 'We favor the establishment of schools in connection with the public school system at which pupils between the ages of fourteen and sixteen may be taught the principles of the trade, not necessarily in separate buildings but in separate schools adapted to this particular education . . . [the] course of instruction in such a school should be English, mathematics, physics, chemistry, elementary mechanics and drawing, mechanics, physiological and biological science applicable to the trade, the history of that trade, and a sound system of economics, including and emphasizing the philosophy of collective bargaining . . . there should be local advisory boards, including representatives of the industries, employers and organized labor . . . Industrial education should be a public function, conducted by the public . . . at public cost.' [8] In this brief statement the Federation established a policy to which it has, in the main, adhered.

Four years later, before the eighth annual convention of the National Society for the Promotion of Industrial Education, the Federation, through its president, Samuel Gompers, officially joined the Society in its efforts to gain federal legislation in support of vocational education.[9] The role of the AFL in securing the passage of the Smith-Hughes Bill was far from negligible,[10] and in the years following the bill's passage, organized labor kept a vigilant watch over its administration. The school curriculums were of particular interest and the variety of trades taught were under the constant scrutiny of the committee on education.

In 1919 the AFL committee on education urged more diversified training for school youth, with the expressed aim of insuring democratic equality of opportunity for all children to prepare for 'the

[8] American Federation of Labor Committee on Industrial Education, *Industrial Education* (Washington, 1912), p. 21.

[9] Gompers, op. cit. pp. 4-8.

[10] Lloyd E. Blasch, 'Federation Cooperation in Agricultural Extension Work, Vocational Education and Vocational Rehabilitation,' U.S. Office of Education Bulletin 1933, No. 15, pp. 60-61.

calling of their choice.'[11] This cannot, however, be construed as an unconditional demand for free admittance, according to individual preference and regardless of labor market conditions, to any of the various types of schools, especially vocational high schools, because at the time the problem was more or less theoretical and remained so until public vocational high schools had gained considerable ground. A noticeable change in the attitude of organized labor occurred in the thirties, when the expansion of public vocational education coincided with the economic depression and threatened the balance of labor supply and demand. Labor continued to support the idea of in-school vocational training, but began to subordinate the educational aspects to economic considerations. The shift in emphasis became clearly evident for the first time in 1935 when the AFL committee on education voiced its protest against what it termed abuses in the use of federal funds, charging that financial aid had been granted to schools located wholly within private industrial plants and operated in a manner that tended to overcrowd certain skilled trades and to lower wages.[12] At the Federation convention in the following year the committee presented its detailed formulation of conditions under which a public school system would be justified in establishing training programs within a private industrial plant.[13] It also recommended that 'State Federations of Labor and Central Labor Unions take steps to set up local advisory committees to advise on all plans of vocational education.'[14] This, of course, was not a new phase of labor's support of vocational education; it merely served to accent its already established policy with regard to these committees and its own participation in them, in order to exert greater influ-

[11] American Federation of Labor, *Report of the Proceedings of the 39th Annual Convention* . . . 1919, p. 431.

[12] American Federation of Labor, *Report of the Proceedings of the 55th Annual Convention* . . . 1935.

[13] American Federation of Labor, *Report of the Proceedings of the 56th Annual Convention* . . . 1936, p. 181; *American Federationist* (March 1936), pp. 242–3, 251–5.

[14] American Federation of Labor, *Report of the Proceedings of the 56th Annual Convention* . . . 1936, p. 409.

ence in the administration and promotion of vocational education.

Organized labor's agitation for better, more vigilant supervision of vocational education reached a peak in 1937 when the George-Deen Act, increasing the amount of federal aid to vocational education, was presented for approval by the Congress. Despite the explicit negative provision in the bill barring the use of training programs in industrial plants unless they provided bona fide vocational training, labor's opposition to the increased appropriation was so strong that on signing the bill President Roosevelt called for an investigation of the whole vocational setup.

The committee appointed by the President published a comprehensive study, to which was appended the report on the experience of labor with vocational education, prepared by the committee's labor members. This report contained the sharpest criticism of vocational educational practices ever voiced by organized labor, and presented recommendations that would have meant the virtual abolition of vocational education at the secondary level and severe restriction of vocational training in all other fields. The stand taken by the report was neither approved by the entire membership of the Federation, nor was it accepted as official policy. The Federation did, however, insist more strongly than before on reforms in vocational education practices and administration, and on more widespread labor representation on advisory committees for vocational education. Its attitude has, on the whole, continued to be favorable to the expansion of public vocational education, subject, however, to constant adjustment of educational ideals to economic needs.

Prevailing Support

The foregoing opinions of representatives of management and organized labor were stated mainly at national conventions, and being couched in general terms, they did not touch on everyday, practical problems; they offered, therefore, little ground for specific opposition. The views of individual employers and trade union leaders, who cope with these specific problems in the course of

their jobs, are much more difficult to elicit and to evaluate. A report of the New York Regents' Inquiry,[15] for instance, states flatly that a questionnaire sent to the Central Labor Council in 1936 evoked so few answers that no conclusions could be drawn. Any investigation, however, made at that time, when the effects of the long depression were still being felt, especially by the building trades, could hardly have met with success. In those circumstances, unions were scarcely eager to hear anything about the training of new workers; from their vantage point it appeared that the oversupply of labor would last indefinitely. At the same time, no leading union representative cared to go on record against vocational education, since such a stand would be in contradiction to labor's national policy.

In the meantime, of course, conditions have greatly changed. Not only has unemployment given way to a scarcity of labor, but the position of most unions has definitely improved. The fear that in-school vocational training could be used to undermine the strength and bargaining powers of unions has been virtually dissipated. The active participation of unions in the establishment and conduct of vocational and technical high schools is more frequent, though still the exception rather than the rule. In general, the relations between a union and a vocational high school depend more upon the personalities in both bodies than on general union principles.

Though outspoken hostility on the part of union leaders toward vocational high schools has become exceedingly rare, the immediate occupational value of in-school training is not so highly esteemed by organized labor as one might like to think. The craft unions do not admit that vocational high school attendance can take the place of one or two years of apprentice training, and even unions composed mainly of operatives hesitate to give schools much credit for the development of really marketable skills. They do, however, regard the vocational high schools as an effective medium for interesting young students in the development of their chosen trade

[15] Thomas L. Norton, *Education for Work* (New York, 1938).

or industry, in the technical principles underlying production, and in the social history of the industry and of organized labor. Indeed, many unions feel that the teaching of labor relations and union principles has at least as much bearing upon the well-being of future workers as the technical and manipulative skills they obtain in such schools.

Employers, of course, do not lay such stress on the teaching of labor relations, but neither do they demand that this problem be excluded from vocational high school programs or that the instruction be weighted against trade unionism. Managerial interest is expressed in the demand for instruction that will develop 'good work habits, dependability and the ability to get on with their fellows.' [16] It is true that some employers are less tolerant of union influence than others, but, on the whole, the divergent interests of management and labor have ceased to be a serious obstacle to the cooperation of both groups in the development of vocational education.

With respect to direct occupational aims, representatives of many large corporations lay more stress on the teaching of technical knowledge than of manipulative skills. Owners and operators of small workshops, however, are not so definite in their stand on this more theoretical education; they usually need definite skills and would be only too glad if schools would provide them. To what extent schools are prepared to do this, they hesitate to judge. Indeed, inquiries made by this study indicate that most employers do not feel that they have had enough experience in hiring vocational school graduates to be able to evaluate the quality of their training fairly.

Some employers, however, are openly critical of vocational high school graduates, not because of any deficiencies in the education and training provided by the school, but simply because they assume that vocational high school students are of lower caliber than those in academic high schools. This stricture is implied even in

[16] Donald S. Bridgman, 'Education for Work and Citizenship,' in *Yale Review*, vol. 28, no. 1 (September 1938), pp. 93–110.

their praise of a few selected vocational high schools for admitting and graduating only "good" students.

But outspoken and well-founded adverse opinions are rarely encountered among either labor or management representatives. The greatest obstacle to the more effective contribution of these groups to in-school vocational education and training lies in their unfamiliarity with the actual work of existing institutions. Wherever and whenever their interest and participation have been enlisted, they have become loyal supporters of this branch of vocational preparation.

XIII

Vocational Education and Training: Problems and Recommendations

IN the foregoing chapters this study has offered an analysis of the occupational structure of the country and what it implies in the way of desirable, if not absolutely essential, education and training for the worker—particularly, the manual worker—if the interests of the individual and of the economy as a whole are to be best served. The study has endeavored also to outline what forms of occupational education and training are available to the worker and to what extent they are being utilized. In the light of the data assembled, it is inescapably clear that, despite the progress of the last few decades, both in-school and in-employment training still fall far short of our educational goals and our industrial requirements. The problems inherent in both our system as a whole and the details of its functioning are challenging and persistent, but if this nation's economic and social vitality are to be maintained and if the highest level of productivity and a high standard of living for all are to be achieved, solutions for these problems must be found.

The Place of the Vocational High School

There is no question that the achievement of the secondary public school in incorporating vocational education and training in its sphere has been notable. But it is equally true that the vocational high school has not attained in all parts of the country the social recognition or the educational prestige of the general high school. This circumstance not only hampers the expansion of a sound vo-

cational high school system but is entirely contrary to the ideals of a free society, in which functional, not social, differences between manual and intellectual labor should prevail, and in which educational opportunities for all the youth of the nation should be equal. Blame for the situation must be divided between the inflexibility and prejudice of public opinion and the defects in the vocational high school system itself.

Too often, in the past, the vocational high school has been regarded as a dumping ground for children whose academic record in the elementary grades gave little or no promise of success in clerical and commercial fields, to say nothing of the professional world. This attitude, however, disregards the fact that the evolution of industrial processes during the last century has been such as to require an increasing amount of mental ability and general education on the part of labor. An understanding of the technical aspects of industry has become as important as manual dexterity for the mastery of many jobs in the economy, and while it is true that not all workers are required to have wide technical knowledge, advancement lies ahead for those who do. The choice of a vocational or technical, rather than a general, high school should therefore be based not on the negative assumption that the student is not good academic material, but rather on the grateful recognition that he has, in addition to a capacity for mental development, an aptitude for manual and technical work. This imposes on those who guide the student's choice of secondary schools an obligation to adopt a more positive attitude toward the vocational high school.

The differentiation among students of varying mental abilities should then be made within each school, and not by segregation in different types of schools. An adequate distribution of mentally gifted children throughout all branches of the school system, and subsequently throughout the producing branch of society, is required by the technical demands of the economy. It would also go far to offset the undemocratic cleavage between the manual worker and the professional and semiprofessional, to raise the standards

of the vocational high school, and to heighten its prestige in the eyes of students, teachers, and the public at large.

The failure of the vocational high school to establish its proper standing as an institution of general education may be laid to certain features of its program and pedagogical approach. Obviously, the vocational high school has to provide the basic manual, technical, and intellectual preparation for specific occupations, but it must, at the same time, infuse this preparation with the characteristics of general education if it is to be regarded as being on a level with the academic high school.

To some extent, all in-school vocational education and training includes fields that are considered the province of general education, such as mathematics and science. All occupations in the metal, machine, and electrical industries, for example, involve applied science and presuppose a knowledge of mathematics. Preparations for these occupations, if conceived in broad terms, must therefore accord these subjects at least the same emphasis given them in general education. Indeed, for these and a number of other trades, it would even be desirable to extend such instruction beyond the limits set by the general high school, in order to meet the student's interests and to establish a direct connection between his particular field of study and the general development of science and technology.

These ends, however, cannot be attained without revising the standards set by the Smith-Hughes Act which, by stipulating a maximum, but no minimum, limit on the time to be devoted to general education subjects, permits the cessation of general education for fourteen-year-olds who plan to become workers in the manual and technical occupations. Fortunately, only a small number of the vocational high schools have so far made use of this opportunity to exclude general education from the curriculum, but the opportunity for them to do so without forfeiting federal financial aid must be regarded as a threat to the unity of the whole secondary school system. And it cannot be accepted as a proper basis for the organization of vocational education.

With regard to the subjects that constitute related instruction, current vocational high school practice often follows the rule that teaching in these fields should serve nothing but vocational goals. Such a narrow utilitarian approach may help to solve certain immediate teaching problems, but it does not open the student's mind to the vast complex of which his work is a part, as would the more theoretical approach of the academic high school. Moreover, the application of two fundamentally divergent conceptions of teaching the same subjects to students, all of whom are just beginning to develop a capacity for abstract thinking and higher understanding, whatever type of school they attend, is not compatible with our one-school system. If the future manual or technical worker is to be given the same educational opportunities as the future professional or semiprofessional, a broader interpretation of related instruction is essential.

Another threat to the unity of the American educational system lies in the disruption of continuity between the vocational high school and institutions of higher learning, inherent in the fact that most vocational high schools make no provision for those of their students who might want to go to college. The vocational high school can never achieve equality with the general high school, if its students have to renounce a college education because there is no curriculum designed to meet college entrance requirements Moreover, there is no justification for forcing on a fourteen-year-old a premature decision regarding the extent of his future education and the nature of his career.

In these circumstances the vocational high school has not been able to realize fully its potential usefulness to industry. Although in-school vocational and technical education cannot be considered either an alternative to apprentice training or a substitute for training on the job, it undoubtedly constitutes the soundest foundation for both. Even if apprenticeship and systematic training on the job were available to a greater extent than they are now, vocational and technical high schools would still be urgently needed to provide the educational background. As it is, these schools now offer

almost the whole of the great body of workers their only opportunity for systematic vocational preparation, and it is not likely that this situation will be radically altered within the foreseeable future.

The statistical comparison of the percentage of the high school population attending vocational high schools with the percentage of the total labor force engaged in manual and technical pursuits makes it abundantly clear that the vast majority of persons working in the trades and industry have had no systematic in-school preparation. The number of persons enrolled in vocational high schools and preparing for the craft trades far from meets replacement needs in the field of craftsmanship, which remains so vital a factor in modern production. As for the training of operatives, only pioneer work has been done in a few limited fields. Thus, the task of providing workers with the broad basic training requisite for mobility in their occupational careers lies ahead.

In the light of the occupational distribution of the labor force and its implicit educational requirements, it is reasonable to expect that vocational or technical high schools should command half the secondary school enrollments. Obviously, such expanded vocational education will always tend to increase the supply of labor for occupations commanding the greatest amount of learning, skill, and income. As a trend, this in no way conflicts with economic needs or with the aims of vocational education, and should not be discouraged. And since it would increase the productivity of the nation as a whole, it is consistent with democratic ideals as well.

Content and Level of Instruction

The closer the approach of the vocational high school system to its proper dimensions, the more care will have to be exercised in the analysis of the individual occupations, and in the direction of students into the various trades, in order to avoid an imbalance of labor supply and demand. Within the vocational high school system, however, there can be no question of adhering too strictly to the demarcations between individual trades and occupations,

and of distinguishing sharply between the preparation of foremen, supervisors, craftsmen, and operatives. If it is agreed that what the vocational high school can offer most advantageously is basic training, in-school preparation for craftsmanship should not be built around narrow labor market standards.

The fact that, through increasing division of labor in industry, many individual jobs require a smaller range of skills does not mean that in-school vocational education should also become more narrowly specialized. This study has found constant fluctuations in the occupational status of foremen, craftsmen, and operatives. The boundaries are fluid and it would be a mistake to assume that the 12 per cent of jobs requiring the highest skills in manufacturing industry, for example, are held by the same employees throughout their working lives. Thus the function of the vocational high school is to prepare not only for an initial occupation but for the future advancement of the worker as well. This situation calls for basic preparation of a larger student body for craft and technical careers than is immediately suggested by the statistics for any given period, and it requires broader technical education and more widely extended basic training for the manual trades.

Vocational and technical school programs will always concentrate on the traditional apprenticeable trades, but should not be dominated by them at the expense of trades and technical pursuits that have developed only recently or that do not enjoy the prestige of commonly recognized skilled work. The incorporation of a vast area of vocations, old and new, remains a goal for vocational education planning.

For the future operative, appropriate in-school preparation has always posed a serious problem. It is clear from what has been said above that for a considerable number this problem should not exist, since many of them are potential craftsmen and should be trained as such. Moreover, there is no reason why, in such fields as the metal and machine industry, the preparation of students who may remain operatives should not closely approach the training of those who will become craftsmen. There are, however, a

number of alternatives to basic training for a craft, which would serve the operative well in his occupational life. For future workers in industries like the textile, clothing, and shoe, which rely mainly on operatives, the most effective and fruitful instruction is that which combines chains of operations and elements of planning and management in an integrated industrial curriculum. Another acceptable approach is the teaching of job families, involving different work in similar materials or the handling of similar machinery in different industries. The educational yield of this last-mentioned type of preparation is admittedly not wholly satisfactory, because adjustment to work is only part of the broader pedagogical objective. But since these programs of study usually require less emphasis on related subjects, their deficiencies may be remedied by allowing for a wider choice of electives in the field of general education. These curriculums, therefore, should not be rejected on principle.

Although basic preparation for work must remain an essential element of secondary vocational education, the other important educational requirements must also be met. To this end, the amount of shopwork in the curriculum should be neither rigidly stipulated nor unduly extended. A minimum of 15 shop hours or 20 periods a week is not necessarily an optimum; it should be regarded as an average, rather than an absolute, requirement. Moreover, shopwork should be offered on a graduated scale, such as the following: 10 shop periods in the 9th grade and 15 in the 10th, in place of the 15 and 20 periods, respectively, in current schedules; 20 periods in the 11th grade, as is now common; and 25 periods in the 12th, in contrast to 20. The reduction of total shopwork hours from 3,000 to 2,800 (2,250 clock hours to 2,100) would not substantially affect the breadth or intensity of basic preparation for a trade. It would, however, leave for nonshop activities 25 of the total 35 weekly periods in the 9th grade, and, of the 40 weekly periods in each of the last three years, 25 in the 10th, 20 in the 11th, and 15 in the 12th. Such an arrangement would make more time available during the first two years for the traditional general

education subjects and would give the vocational high school a better chance to achieve its dual purpose. This kind of flexibility would also enable the school better to adjust a student's program to his individual needs.

The proposed schedule would, of course, make for greater similarity of all secondary education, especially in the 9th year, thus easing the student's shift between vocational and academic programs and giving the instructor more opportunity to discern the student's particular abilities and interests. The same ends might be served by requiring junior high school attendance of all pupils and deferring their choice of special schools and programs until after the 9th year. In a great many communities, however, there are no junior high schools. Moreover, the junior high school as it exists today gives no promise that even with extensive reorganization it would be able to explore satisfactorily both the mental and manual aptitudes of the student. In general, they are not much better equipped than elementary schools to provide shopwork facilities that would adequately serve exploratory purposes. For the future manual and technical worker an exploratory 9th year in a vocational school would be far more valuable. It would seem advisable, therefore, to lay stress not on the unified 9th year in a junior high school, but on sufficient similarity in the work of the 9th year in all schools, to facilitate the transfer of students from one type of school to another.

Such transfer will be made easier by the growing acceptance of English, social studies, mathematics, and science, as essential components of all high school curriculums. On this common ground the vocational high school is enabled to move closer to the center of the high school system and to assume a position of full equality with the general high school. With the total of 85 periods for subjects other than shopwork, as suggested above, a typical vocational high school curriculum could offer a 4-year course in English, a 3-year course in social science, a 4 or 3-year course in mathematics, a 3 or 4-year course in scientific and technical instruction (both general and applied), and 2 or 3 weekly periods of

health education, leaving 5 periods for electives in the 11th and 12th grades.

In this connection, it is well to repeat what has already been briefly noted as a basic problem in the relationship of the vocational to the general high school: equality presupposes an equal standard of teaching as well as common subjects. This does not, however, preclude differences in the approach to the material. For the vocational high school it implies an abandonment of the idea that facts, rules, or formulas in the fields of mathematics and science should be taught as mere instruments of shopwork, without any theoretical explanation, but it does not demand that the inductive method of teaching be rejected entirely in favor of the deductive system, toward which the general high school leans. Either approach is justified, if its ultimate objective is the student's true knowledge and understanding. With regard to social studies, the general content of the course in the vocational high school should not vary substantially from that of the general high school, but the former may prefer to introduce these subjects as the social and technical history of various industries, proceeding from there to general political and social history. By starting at the point of the student's immediate interest, and interpreting first the growth and functioning of a society within the range of his experience, a much sounder comprehension of the historical background may be achieved.

In any case, whatever the approach, the standards of teaching in both the vocational and general high schools should aim at equal success in developing the mental facilities of their students and preparing them for intelligent citizenship. The educational issue can, of course, never be wholly resolved by discussion of either the content of school programs or the teaching methods to be applied for effective results. Development of the human personality depends as much on the atmosphere of the school, the quality of the teachers, and on an infinite number of other factors—even imponderables. These, however, raise problems for general, as well as vocational, education and are not the special concern of this study.

Desirable Adjustments in School Programs

Various other adjustments in the vocational high school program should be permissible. In a vocational-technical course requiring mainly technical information, shop hours might well be further reduced. Conversely, in courses preparing for trades that demand little related knowledge, the usual related subjects should be replaced by more shopwork or more general education. It should always be possible to make revisions in favor of one subject at the expense of another, according to the particular trade or the student's special requirements.

Adjustments should also be directed at preparation for college. Normally, of course, the vocational high school would continue to prepare for immediate gainful employment in agriculture, industry, or the service occupations. Nevertheless, it should provide an opportunity to prepare for further education at an advanced level by offering a course of study acceptable for college entrance.

Most vocational high school students who aspire to college are likely to be interested in engineering careers, for which the technical high school or a high school of science would generally offer the best preparation. But vocational high school would serve these ends as well, if the curriculum were reorganized to offer less shopwork in the first two years and to teach mathematics and science at the same level as in the general high school. The flexibility and scope of the vocational high school would be further increased if it were to include more vocational-technical classes, a development that is highly desirable in view of the increasing importance of technical knowledge in production.

Indeed, such a development might eventually lead to a definition of the role of purely technical education within the high school system. If the vocational high school should assume the vocational-technical role for which it seems destined, the purely technical high school could then concentrate on preparing only for the engineering professions and for the technical vocations—drafting, designing, laboratory work, and the like—that require familiarity with

manual skills only in so far as they further technical understanding. The technical high school would thus become a modern school of applied science in the strictest sense. It would seem advisable to encourage the establishment of more such schools; to outline uniform basic curriculums that would prepare qualified students for their role in the technical world; and, since the need for technical aptitudes and abilities is not confined exclusively to industrial areas, to seek federal aid for a more coordinated development of technical high schools on a national scale. At the same time, the distinction between purely technical, vocational-technical, and purely trade careers should be fluid and mainly a question of degree; no rigid differentiation between technical and vocational high schools should be allowed to develop.

Within a system in which technical instruction would be so widely expanded at the secondary level, the future of the technical institute would depend on its assumption of specific tasks. It is somewhat doubtful that a realistic solution to the problem as a whole can be found in the recent plans for technical institutes of post-high school grade, which are to be attended as an extension of high school. This stricture should not be construed as a negation of the value of such institutions in specific and local cases. New York and certain other cities may offer conditions that favor technical institutes in the form of a 13th and 14th high school year. If the collaboration of management, labor, and educational authorities is secured, and if curriculums are built around the needs of local industries, the handicaps which have hitherto barred the expansion of technical institutes may be overcome in more than exceptional instances.

But, in general, the logical institution for preparation for technical pursuits should be the technical high school. The transition to work for those students who do not go on to engineering college should not be deferred by attendance at a technical institute. There is a time limit beyond which it is simply not efficient to keep a student at the school level in his practical preparation for a job. If the student has been wisely guided in his progress through voca-

tional and technical courses, he should be ready to benefit by training within industry more than by extended in-school preparation.

The future of the great majority of technical institutes therefore depends on a clear separation of their task from that of the technical high schools, and on the recognition that as mere post-high school institutions they cannot play an important role. If, on the contrary, they are conceived as adult education institutions for the further training of experienced workers in vocational-technical fields, they have a definite place. By specializing in the various production methods of individual industries, and by teaching more advanced and more specific technical material than either the technical high school or the engineering college would be willing or able to provide, the technical institute can render invaluable service to the worker bent on advancement and to the producer intent on improving his production techniques.

Breadth of Training in Operational Skills

One of the most critical and most complex questions in the entire field of in-school vocational education and training is what constitutes proper breadth of training in operational skills. It has repeatedly been established by this study that narrow training for a single job is undesirable from every point of view. The wider limits, however, are far more difficult to define. Any number of factors—the interest of the student, the facilities of the school, the demands of the economy, the attitude of organized labor—must be given due consideration in attempting to reach a sound and reasonable conclusion on this subject.

In many of the schools within the vocational high school system, shopwork is arranged in such a way as to give the student an opportunity to work with widely different materials, tools, and machines, in the first year or two, and to permit concentration on the chosen trade only in the last half of the course. The traditional craftsman is, of course, extremely skeptical about the practical value of any plan that offers introductory training covering a variety of fields. The craft skills and apprenticeship are focused

on a single trade, and the higher the craftsman's skill, the greater his skepticism. Nevertheless, for in-school vocational education and training, the broad approach is the most valid. In so far as it is education, it aims to introduce the student to as wide a segment of industrial production and processes as possible. Moreover, it gives him a sound basis for making a wise final choice of vocation.

Multiple trade experience also enables the student to try his hand at several unrelated industries, even if only as a semiskilled worker or an operative. Such flexibility makes him less dependent on any one industry for a livelihood, and it is directly in line with the demands of modern technology, which has so greatly expanded the need for capable operatives in a wide range of industries. And finally, familiarity with a variety of materials, work processes, production methods, machinery, and apparatus must be regarded as an asset, even for the worker who clings to one trade. It is for this last reason that the Brooklyn Technical High School, for one, requires all students to take shopwork in patternmaking, foundry practice, forging and welding, sheet metal and elementary machine shop, as part of an integrated technical training course. The experience in the different workshops is not viewed as unrelated exploratory work, but rather as an essential part of a continuous course of study preparing for work in a single trade.

Vocational high schools would do well to pursue a course that lies somewhere between the strictly integrated one-trade curriculum and that of exploratory work in several unrelated industries. The 9th grade might well offer prevocational training in only loosely related industries, for the purpose of teaching initial skills as well as characteristics of materials and production processes. Work in the 10th year could more closely approach the content of the chosen occupation while still offering broad basic training. For example, shopwork for all the metal trades would be essentially the same. The last two years would be concerned with a more definite occupational area and would include large projects requiring extensive work in the field. This is especially necessary since the task of the vocational high school is by no means achieved by

teaching isolated skills under laboratory conditions. It consists rather of teaching the skills in conjunction with their application to a given piece of work. In other words, the planning of the work, determining the materials and production processes, and making decisions on other broad phases of the procedure as a whole, are essential components of shopwork and its related instruction.

This matter of work projects poses one of the gravest problems in the whole vocational education system. Actual production on a commercial basis is, of course, neither the province nor the aim of the vocational high school. It is precisely this freedom from commercial requirements that enables the schools to plan courses that permit extensive demonstration and explanation and give the student a chance to learn more operations than industry requires of a single worker. Suitable work projects are, nevertheless, vitally important, since operational skills can be learned only by doing, and serious pedagogical difficulties are encountered when students are not given tasks that tax their full capacities and command their whole attention. The Connecticut trade schools offer one of the best examples of adequate work projects, for the major part of their programs consists of actual labor, ranging from minor repairs through the production of small parts and machinery to the building of complete houses. Such a system brings to the vocational high school an atmosphere of reality and has enormous advantages for training the student, provided that it is not stressed at the expense of cultural and related trade instruction.

So far as this study was able to determine, most schools do not have enough work projects to enable the students to practice extensively the required basic operations. Although shop facilities are usually entirely adequate, the schools are forced to resort to the making of small exhibition objects, which strongly suggest the avocational activities of the general education program.

Since the provisions of the Smith-Hughes Act require shopwork to be 'on a useful basis,' the vocational high schools hesitate to admit openly the need to employ practice work in the absence of suitable work projects. This is a negative attitude that should be

overcome. In the academic schools virtually all work is done in the form of exercises, though it might be preferable to do mathematical computations or engage in creative writing for practical purposes. On the same basis, vocational schools should either be permitted to give extensive practice training without subordinating systematic step-by-step teaching of basic operations to the idea of 'useful work,' or they should be granted greater freedom to obtain actual productive work from city departments, state and federal agencies, and industry. Many schools now rely on students, teachers, or friends of the staff to supply them with work projects, but this is too casual a solution and for the study of many trades not really feasible. Cooperation with official or industrial groups offers a more satisfactory answer.

Whatever objections industry or labor might have on this score can be easily met: the amount of production by schools would, at best, be too small to constitute a threat to either element. And with regard to labor alone, the more adequate the vocational high school, the more likely will be a prolonged school attendance on the part of those very boys and girls whose early entrance into the labor market would be real competition.

Arrangements for getting suitable work projects might well be facilitated by the vocational high school advisory committees. Composed, as they are, of educators and representatives of management and labor, these bodies not only have the ideal background for studying the subject, but they are also in a strategic position to act fairly in the best interests of all concerned—the school, industry, and organized labor.

If, however, vocational high schools are to handle entire work projects successfully, their teaching staffs must be adequate to the task. That means that the faculty must include not only academic instructors and craftsmen, but also technicians, engineers, architects, or other trained persons capable of organizing and executing the projects—in other words, a staff composed somewhat along the lines of plant personnel.

The inclusion of entire work projects within the vocational high school range implies a greater emphasis on technical knowledge, and thus brings the goals of the vocational and technical high school closer together. This is a trend to be encouraged. Since schools are really better equipped to cultivate understanding than they are to teach operational skills, they should make the most of that advantage. At all events, every effort should be made to keep at a minimum the division between those students who can plan a production process and those who can perform only a few operations. It is true that a sizable number of students in the vocational high school may have difficulty in keeping pace with the technical instruction, and that they will have to be grouped according to their capacities in this direction, but this is a problem common to all schools and should not be permitted to lower vocational high school standards as a whole.

If the vocational high school is to participate actively in promoting the intellectual mobility required by the skilled crafts and trades, and the technical and semitechnical positions reached through them, the vocational-technical course will have to be the rule rather than the exception, especially in regard to the metal and electrical trades and some of the building trades. The practical value of this recommendation is supported by the fact that many companies that conduct elaborate apprenticeship programs give preference to technical high school graduates in selecting their candidates. The trades for which these programs prepare require extensive operational skills, but the companies act on the theory that they can, and would rather, teach the necessary skills to students who already have an ample technical background.

Were there any likelihood that apprenticeship in this country would expand to the proportions it has attained in Europe, the vocational high school might consider concentrating its educational activities on technical information, and its operational activities on demonstration. But since the probability of wide expansion of organized trade training in industry is slight, the vocational

high school is still faced with the task of teaching operational skills and supporting, but not supplanting, this teaching with technical and scientific instruction.

The Role of Apprenticeship

Placing the burden squarely on the vocational high school by no means solves the problem of providing craft skills adequate for our industrial needs. Industry, itself, must assume its share of the training task, both by improving the character of the instruction and by expanding apprenticeships and the less formal systematic training programs.

For example, apprentice training might well be expected to include not only a succession of work opportunities, but also positive elements of teaching. Actually, however, the training includes little systematic demonstration, teaching, and explanation; the best the apprentice can anticipate is the opportunity of seeing how craftsmen do their work and of being allowed to do the same sort of work in proper surroundings. Related instruction constitutes the one exception to this rule, but this occupies only a very limited time and does not affect the prevailing character of apprentice training.

Thus, despite the apprentice's advantage over the in-school trainee in having the chance to observe a number of well-trained journeymen at work, the almost total limitation of his training to operational skills is constricting. The minor role accorded technical training usually prevents the apprentice from getting a broad understanding of production as a whole. The situation could be remedied with relative ease by having vocational education and training in school precede apprenticeship. With the expansion of vocational-technical training at the high school level, the apprentice could be equipped with a much broader understanding of all vocational-technical problems before he enters on his formal in-employment training, and the related instruction given during his apprenticeship could then be carried on at an advanced level.

Schooling, however, should not end with the expiration of ap-

prenticeship. The young journeyman, for whom many opportunities for advancement exist, should avail himself of further part-time education and training in vocational or technical high school, for study in specialized fields he should attend a technical institute.

The figures on apprenticeship show how dismally this type of training fails to supply the necessary replacements for the craftsmen who withdraw from industry each year. According to the 1940 occupational classification made by this study, the number of positions for which apprentice training should be considered logical preparation was approximately 6.5 million—that is, 5.7 million craftsmen, some 600,000 foremen, and at least 200,000 independent producers for whom the possession of operational skills is prerequisite to successful self-employment.

In order to calculate the number of apprentices to be trained annually for such occupations, it is necessary to have an approximate idea of the annual dropout rate. A National Industrial Conference Board study, made in 1935,[1] estimated that 5 per cent of the skilled workers were lost to the labor force every year, as a result of death, retirement, or change of occupation. On this basis, the average occupational life expectancy would be only 20 years —a very low estimate, indeed. The Apprentice-Training Service, on the other hand, based its estimates of the required number of apprentices on a much lower annual dropout rate.

In analyzing apprentice-journeyman ratios, the authors of this study proceeded on the assumption that average tenure for a craftsman is 28 years. The annual dropout rate in this case would be 3 6 per cent, which can hardly be considered an excessive estimate, at least for the near future, in view of the fact that the median age of skilled workers is comparatively high. If, therefore, the annual openings in the ranks of craftsmen are to be filled by workers who have had apprentice training, 234,000 would have to enter apprenticeships every year. This figure presupposes, of course, that the majority of those who start apprenticeships complete their train-

[1] National Industrial Conference Board, *Wanted: Skilled Labor*, Studies of the National Industrial Conference Board, No. 216 (New York, 1935).

ing and become members of the skilled labor force. The Apprentice-Training Service, however, estimates that, in the past, less than half the apprentices graduated into skilled labor classifications. If this situation prevails in the future, the annual number of new apprentices must be correspondingly higher.

The total number of apprentices who should be in training at any given time depends on the number entering apprenticeship and on the average length of training. According to the standards formulated by the Federal Committee on Apprenticeship, the average term is three years and nine months, so that on the basis of 234,000 new apprentices annually, there should be about 877,000 in training at any given time. This figure, however, appears to be out of all proportion, not only to the potential technical expansion of apprentice training, but also to the actual training requirements of the economy. It might well be desirable to have 234,000 youths absorbed annually into a systematic program of training for skilled work in industry, but it would be an exaggeration to say that all of them would require a formal four-year apprenticeship to qualify for those positions that have been included in the estimates of the number of craftsmen, especially if in-school preparatory training is extended. But if only half this number were to serve a regular apprenticeship, even that figure would amount to four or five times the number of all apprentices enumerated in the 1940 census.

A shorter and less formal apprenticeship (learnership) might be sufficient to fill the other craft positions. These, together with the regular apprenticeships, might then absorb 234,000 annually, without raising the total number of trainees for crafts beyond a reasonable level. According to the composition of the gainfully occupied in crafts and technical pursuits, about 210,000 of each year's group would be boys. This constitutes about 17.5 per cent of the males leaving school, and corresponds to the average percentage of craftsmen, foremen, and self-employed in the labor force. The figure can therefore hardly be considered too high.

The needs of the economy, however, may not be satisfied by a system of in-employment training restricted to the replacement

of craftsmen only. A number of industries rely mainly on workers who are classified as operatives, but whose occupational skills can be acquired only over a long period of training and work experience. Among the 8 million operatives there are many, especially in the textile, clothing, and shoe industries, whose work approaches craft standards, although only in a limited field, and for whom some kind of systematic introduction to work would also be desirable. A sound training policy might well include an extension of learnership programs, lasting about a year and designed primarily for these operatives. Assuming that some 100,000 youths would be given such training every year, the annual systematic introduction to industry would then involve a total of approximately 334,000 young persons.

Organized Transfer from School to Industry

The whole task of occupational training would be greatly facilitated by the organized annual transfer of school-leaving youth into industry. Such a project would, of course, be a formidable undertaking, and could be accomplished only with the cooperation of schools, management, and organized labor, working through the medium of the advisory boards. It would, however, go far toward solving the serious educational and social problem of launching youth on an occupational career without an interruption of years spent in dead-end jobs or possibly without employment. It would also enable the worker to derive the fullest advantage from his vocational preparation, and to develop his abilities and knowledge during the years when his flexibility and capacity for learning are at a peak. And beyond that, the probability of a promising job immediately after the completion of schooling would give meaning and inspiration to vocational education and training in school.

The expansion of vocational and technical high schools along the lines suggested in earlier portions of this study would be an essential step in the direction of unifying educational and industrial life. Undeniably these schools can contribute the kind of intellectual preparation and vocational training that would render the

students extremely desirable as apprentices or learners. During the contact with the students over a four-year period, teachers and guidance counselors have unexcelled opportunities to judge their aptitudes, qualities, skills, and interests, and to guide them accordingly in their selection of an occupation and their later transition into the working world. Indeed, the best testing ground for future apprentices is the vocational high school, where the student's qualifications can be checked against the requirements of a particular trade If industry were to make full use of this advantage, errors in the choice of apprentices could be virtually eliminated.

Cooperation of this nature between schools and industry would also enable the former to assemble useful data on the quantitative and qualitative demands and the general working conditions of the local plants into which their students would probably be absorbed. They could then, to a certain extent, adjust their programs and teaching accordingly. The practical benefits to be gained from such cooperation are obvious, but they should not be allowed to blind the schools to their primary function of education. Vocational and technical high schools must always be intensely conscious of their tasks in the field of general education, and of their obligation to prepare future workers for advancement by providing them with broader operational skills and technical knowledge than local industries may regard as adequate.

The employers' main contribution to the systematic transfer of youth from school to industry would be to create annually the number of openings that would be needed. To a large extent, these openings would depend on business and labor market conditions, which are partly beyond the control of the individual employers. In times of growing unemployment, the absorption of new workers, though they may be only trainees, would naturally be opposed by management, as well as by those persons already employed. The problem of transferring students to industry cannot be solved independently of general employment policy. For its part, any full employment policy would evade one of its most urgent tasks and would substantially lessen its chances of success, by failing to pro-

vide for the absorption of school-leaving youth into the economic world, and for their initial occupational training within industry.

The willingness of management, however, to expand the number of apprenticeships and to enter into more apprenticeship and learnership agreements depends not only on the level of employment. The persistent scarcity of skilled labor, which we cannot reasonably expect to be mitigated by a renewal of the immigration of European craftsmen, may induce management to recognize the need for more systematic training than there has been in the past. But other persuasive factors are bound to modify the employer's readiness to expand his training programs. Long indentures are manifestly repellent to the entrepreneur, especially when business conditions are unsettled and thus not favorable to long-term commitments. This resistance could, of course, be overcome by expansion of the system of apprenticing to a trade rather than an individual employer, which shifts the responsibility for continuous employment from the single employer to the joint apprenticeship committee of the trade.

The set wage rates of the apprenticeship standards also pose a problem in some quarters. Big corporations that are in need of specially trained workers may be willing and able to comply with advanced standards, but the small shop owners, who should rightly play a major role in the training of craftsmen, are likely to have difficulty in meeting these stipulations, and may therefore be more inclined to employ helpers and other workers for whom there are no strictly regulated wage scales or training requirements. It would seem then that if the yearly transfer to industry of several hundred thousand graduates of the various types of high schools is to be efficiently organized, there will have to be more flexibility, in general, and certain specific adjustments in apprenticeship standards.

Another consideration in the potential expansion of apprenticeship is the willingness of school-leaving youth to commit themselves to an additional four-year course of training. Boys of eighteen may hesitate to enter such long-term agreements, despite

the advantages to be gained thereby. To date, however, all available information indicates that there have usually been more applicants for apprenticeship than there have been openings. This may be ascribed partly to the fact that the courses have usually been offered either by big corporations, in which promising careers seemed possible, or in trades with comparatively high wage rates. With the expansion of opportunities this situation may change, but in the near future, at least, the number of candidates is likely to exceed the number of openings.

Labor's stand on apprenticeship will, of course, always be governed by labor market conditions. It is entirely justifiable that organized labor should make every effort to safeguard jobs and wage standards. But in order to prevent undue restriction of the opportunities for entering a trade, all standards and regulations bearing on the actual number of apprentices should be determined first by management and labor alone, and then subjected to public examination.

As this survey indicates, the groups concerned with apprenticeship inevitably have diverse views and interests. Economic conditions, however, seem so strongly to urge more systematic occupational training that the common welfare of management, employed labor, and school-leaving youth may be expected to cause them to reconcile their conflicting theories and to shape an integrated educational and industrial training system comparable to that which has developed for the professions.

Conclusions

A truly comprehensive system of vocational education and training, then, should include the following elements: elementary school education, including a few hours weekly of manual work or practical arts; four years of in-school vocational education, starting with an exploratory 9th year offering work of a prevocational character, and providing in the next three years an increasingly specific education and training in trade school, vocational-

technical high school, or technical high school. Graduates of these schools should then be enabled to make an easy and systematic transfer to apprenticeship or some less formal type of in-employment training. All apprentices should continue to receive supplementary instruction, while other trainees should also have access to such instruction. Beyond that, any worker should have the opportunity to obtain trade extension training in part-time or evening classes. Full-time training of a specialized and advanced nature should be available in technical institutes. Since college preparatory courses would be included in vocational education programs, college would also be open to those desirous of pursuing their studies at the level of higher education. Such a system would have the advantage of securing technical mobility without sacrificing the opportunities for work on a craft level, and it would, in addition, overcome the rigid separation between craft, technical, and managerial positions—a result that must be regarded as desirable from technical, social, and political points of view.

This broad outline and the preceding proposals for specific reforms and adjustments in our vocational education and training system are neither unrealistic nor impracticable. Indeed, the conduct of this study has been motivated throughout by the conviction that all recommendations should aim not merely at changes that would be theoretically desirable, but rather at improvements that would be solidly grounded in the underlying educational philosophy of the nation and, at the same time, capable of achievement in the light of the social and economic conditions of today and of the foreseeable future. It is for these reasons that so many technical details of both the occupational structure and the educational system have been examined and weighed with regard to their place in a precise definition of satisfactory vocational education goals and the means of attaining them.

Important as the resultant conclusions may be for the furtherance of vocational education, they are by no means irrelevant to the vast and complex problem of general education. In fact, their

greatest importance lies in their applicability to the focal task of education as a whole and not in their bearing on a specific phase of education.

In the recent spate of literature on educational issues, the proponents of the liberal arts have launched a vigorous offensive in support of their particular educational aims. A dominant theme in all discussions is the warning against vocationalism and specialization. With these warnings we can find no fault. It is true that vocational education implies a certain degree of specialization, which is essential to the realization of its goal of practical occupational preparation. But a sound vocational education program does not prevent a student from getting a balanced general education. The danger of vocationalism exists only when the principles and aims of a fully rounded education are neglected. Indeed, if vocational education in its future development conscientiously assumes the duties of any truly organic education, its work may well proceed on a sounder basis than that of certain liberal arts programs which too, in their own way, run the risk of being dangerously narrow. Neither such programs nor any others can claim to be an integrating force unless they help the student to find and fill his proper niche in the social and economic life of our time.

Since college requirements mold the character of the institutions from which their students are drawn, the statements made by liberal arts educators have an influence that penetrates far beyond these colleges. Thus any overemphasis on their part on the humanities, the social sciences, or the physical sciences has direct bearing on the secondary schools and, in fact, contains a threat to the unity of the public secondary school system. The high schools cannot possibly nullify their significant achievement in having incorporated vocational education and training in their sphere. The need is too great to permit their withdrawal from the field. Liberal arts educators should therefore accord to vocational education its rightful place in a unified educational program, in order to avoid a definite cleavage among the secondary schools.

There is nothing in the pedagogical situation as such to cause

such a cleavage. The recommendations made by this study, in rejecting vocational extremism, are based on a search for a synthesis of educational aims and therefore contain no threat to this favorable circumstance. As here conceived, vocational education does not compete with the goals of a truly humanistic education; on the contrary, it embodies some of the latter's oldest and soundest principles—learning by doing, preparation for life, and the integration of education with the actual social process.

Thus the reinterpretation of the ever-recurring interest in vocational preparation, evidenced throughout the history of American pedagogical thinking and practice, should be a current pressing concern for our educators, economists, and statesmen. It may well be that a workable fusion of vocational and general education, and the recognition of the equal value of both, will be one of this country's major contributions to a new concept of democracy in education the world over.

APPENDIX I

Notes on General Education in Selected European Countries

Germany

OF ALL European educational systems, the German may be regarded as the most conservative. Throughout the nineteenth century and the first decades of the twentieth, the institutional structure remained essentially unchanged. Education was administered by the individual states, but the kinds of schools, the curriculums, and the teaching methods were more or less uniform throughout the Reich. With very few exceptions, elementary and secondary schools were public schools, with the former category divided into Catholic and Protestant institutions in the majority of the states.

In general, full-time education was compulsory for children six to fourteen years of age. Terminal elementary education was provided by the *Volksschule*, the backbone of the German educational system. The *Mittelschule*, an elementary school augmented by a ninth year, and occasionally a tenth, also offered terminal education. Secondary education was provided for children from nine to eighteen. Under the monarchy, most of the secondary schools had their own three-year preparatory classes (*Vorschulen*). Thus, children who planned to enter secondary schools were, from the very start, educated separately from the great mass of children who attended the *Volksschulen*. Under the Weimar Republic, however, these special preparatory classes were abolished; a uniform elementary education for all children six to ten years of age was established, thereby deferring the separation into two groups

until after four years of common schooling. In line with these changes, the age limits for secondary education were set at ten to nineteen.

In the course of time, secondary education, which had long been confined to the classical *Gymnasium*, with its heavy stress on Latin and Greek, achieved a certain diversity.[1] Other types of schools were established: namely, the semiclassical *Realgymnasium;* the *Realschule*, with a six-year curriculum designed to follow immediately after three (subsequently four) years of elementary schooling, and to prepare especially for commercial pursuits; and the *Oberrealschule*, which was the same type of school as the *Realschule*, but extended the course by three years, laid special emphasis on modern languages, and science, and, like the *Gymnasium* and the *Realgymnasium*, prepared students for admission to a university. After 1918, attempts were made to open secondary education to students who had completed seven years of elementary school, and thereby to ease their access to universities, by establishing a special six-year secondary school (*Aufbauschule*). These schools, however, remained few in number.

Under the National Socialist government, German schools became channels of Nazi ideology and propaganda, but with few exceptions, the structure of the educational system remained unchanged. A Reich Ministry of Education was created to unify the system throughout the nation. At first, the individual states were permitted to retain their autonomy in the administration of education, but, as the Nazi regime developed, the state ministries gradually became subordinate agencies. In 1938, the nine-year secondary education program was reduced by a year to meet the growing demand for manpower imposed by the expanded preparation for war. The secondary school system was simplified by reducing the principal types of schools to only two: the *Oberschule* became the main type, with one branch specializing in mathematics

[1] Adolph E. Meyer, *The Development of Education in the 20th Century* (New York, 1939), pp. 312–36; Rudyard K. Bent and Henry M. Kronenberg, *Principles of Secondary Education* (New York, 1941), pp. 392–3.

and science, and the other in languages (Latin, English, and a second modern language); the *Gymnasium*, stressing Latin, Greek, and English, survived as a less prevalent type. The few *Aufbauschulen* also continued in existence.[2]

The distribution of pupils among the various types of schools in 1931–32 may be seen in Table 1. The high percentage of school attendance among children under fourteen, and the sudden decline in attendance in the older age groups, indicate that the bulk of the population attended only elementary school. Together with the *Mittelschule*, the elementary school absorbed almost 80 per cent of all ten to thirteen-year-olds, and 87 per cent of the total school population in the ten to fourteen age group. Only some 12.6 per cent of the fourteen to sixteen-year-olds attended secondary schools. Since many students left school at sixteen to enter on commercial

TABLE 1. PERCENTAGE OF POPULATION (GERMANY) IN VARIOUS AGE GROUPS ATTENDING VARIOUS TYPES OF SCHOOLS, 1931–32[a]

Age[b] *Group*	*Total Pop. (in thousands)*	*% in All Schools*	*% in Elementary Schools*	*% in Mittelschulen*	*% in Secondary Schools*
10–13	3,489	91.0%	75.0%	4.0%	11.0%
13–14	651	81.0	65.0	4.8	13.0
14–15	624	19.5	3.0	3.9	12.0
15–16	698	16.0	0.4	3.0	12.5
16–17	930	6.4	—	—	6.0
17–18	1,194	4.4	—	—	4.4
18–19	1,212	3.9	—	—	3.9

[a] Computed from official figures in *Statistisches Jahrbuch für das Deutsche Reich*, 1932 (Berlin, 1932), pp. 421–9.

[b] The number of students in each age group has been estimated from data on the number of students in the different grades, using as criterion the normal age of children in each grade. In secondary schools, therefore, the later age groups include students who were one, or even two, years older than indicated, since all children are not automatically promoted from one class to another because of age. The difference in the sizes of the groups may be accounted for by the low birth rate during World War I.

[2] H. Burmann and C. Schmölder, *Handbuch des gesamten Jugendrechts*, vol. 1, section 3, pp. 32–7.

or technical careers, those who completed the course required for admission to a university comprised less than 4 per cent of their age group. Even of those who were qualified for university entrance, only a part actually enrolled.

The content of elementary education included the usual subjects: the three R's, drawing, singing, gymnastics, and the rudiments of history and science. Instruction was directed toward early entrance into occupational life, with the result that arithmetic was heavily stressed while such subjects as civics were neglected. Workshop instruction, however, was virtually unknown, though a few progressive schools under the German Republic developed some programs in this field. In sharp contrast, secondary education was scarcely influenced by practical considerations; indeed, this was more true in Germany than in most other European countries.

An important feature of the German school system was that while elementary school instruction was tuition-free, all secondary schools required payment of fees. This largely accounts for the virtual exclusion of the whole working population from secondary education. Scholarships granted under the Weimar Republic helped a small number of children to surmount this obstacle, but, as we have seen, these left small impress on the system as a whole. The length of secondary and university education, with its tuition costs and the implied deferment of earning, rendered such advantages available only to the small minority that could afford them. With this line of demarcation imposed by economic factors, the secondary schools and universities became institutions for the benefit of only selected social strata as well.

Since the end of the second world war, educational policy and school administration have again become the responsibility of municipal and state governments. Inspired by the social changes effected by the war, discussion of educational reform is rife in all parts of Germany. The chief topics under consideration are the introduction of a compulsory ninth school year, the extension of common primary school attendance from four to six or eight years, the abolition of secondary school tuition fees, at least for the

needy, and revision of secondary school curriculums toward a reduction of the classical content and an adjustment of teaching to the more practical requirements of modern society.

The outcome of these discussions is still in doubt, but in any event it is likely to vary widely among the states. For example, some industrial areas of northern Germany are virtually certain to accept the compulsory ninth year, whereas southern Germany appears hesitant to endorse this reform.

England and Wales

The English school system, like the German, gives evidence of a distinct barrier between primary and secondary education. More devices have been developed, however, to level this barrier. In addition, the classical type of secondary education is less pronounced, and practical considerations are given more weight. Character-building, rather than learning as such, is recognized as the principal task of education.

As may be seen from Table 2, the pattern of English school attendance in 1938 was not wholly unlike that of Germany in 1931–32. The sharp decline from an enrollment of 93 per cent of the thirteen to fourteen-year-olds to 36 per cent of those in the fourteen to fifteen group, and then to only 17 per cent of those in the fifteen to sixteen group, is eloquent. Schooling at that time was compulsory for all children between the ages of five and fourteen. Obviously, the majority of the children were leaving school on the completion of their elementary education.

In England, as in other European countries, attendance at secondary schools is not the logical 'next step' after elementary school that it is in the United States. Students who intend to enter secondary school are transferred from elementary school between the ages of eleven and twelve. That the great majority of the school population between eleven and fourteen or fifteen remain in elementary schools is evident from the fact that these schools claimed 86 per cent of the twelve to thirteen-year-old school population, and 85 per cent of the thirteen to fourteen-year-olds. In many

TABLE 2. PERCENTAGE OF POPULATION (ENGLAND AND WALES) IN VARIOUS AGE GROUPS ATTENDING VARIOUS TYPES OF SCHOOLS, 1938[a]

Age Group	*Total Pop. (in thousands)*	*% in All Schools*	*% in Elementary Schools*	*% in Grant-Aided Secondary Schools*	*% in Junior Tech. Schools*
5–6	558.0	84.9%	84.7%	.2%	—
6–7	578.0	92.6	92.2	.4	—
7–8	590.0	94.1	93.7	.5	—
8–9	592.0	92.9	92.2	.7	—
9–10	594.0	93.5	92.3	1.2	—
10–11	598.0	93.3	91.3	2.0	—
11–12	614.0	94 7	87.1	7.6	—
12–13	630 0	94.5	81.4	13.0	0.2
13–14	642.0	93.3	79.2	13.2	0.9
14–15	658.0	37.0	22.8	12.3	1.0
15–16	581.0	17.0	3.1	12.3	1.4
16–17	727.0	6.9	0.3	6.1	0.5
Over 17	2,577.0	1.1	—	1.1	—

[a] *Education in 1938*, Report of the Board of Education and Statistics of Public Education for England and Wales (London, 1939), Table 2, p. 91.

towns, elementary schools are themselves divided into junior sections for the first five age groups, and senior sections for the next four. But about half the older elementary school pupils, especially those in small communities and thinly populated areas, are taught in elementary schools common to all age groups.

Elementary school instruction is generally confined to reading, writing, and arithmetic, the rudiments of physics, history, and geography, and some work in industrial arts. Thus, the bulk of the school-leaving population enters the working world with only limited general education, a little manual training, and no vocational education at all. Actually, with so low an age level for school-leaving youth, little more could be accomplished in the way of occupational preparation.

The Education Act of 1936 raised the age limit at which children

were permitted to leave school to fifteen, effective as of September 1939. Exemption was made possible, however, for those who had found 'beneficial' employment. Because of the outbreak of the war, enforcement of the act was deferred. School attendance up to fifteen years of age was then made compulsory, with no exemptions, by the Butler Act of 1944, which became effective on 1 April 1947.

Secondary schools in England are mainly private schools, most of which are publicly inspected; if deemed 'efficient,' they receive public aid. The 1938 census enumerated the secondary school enrollments only in such grant-aided schools; in addition to the 470,000 so counted, there were more than 100,000 students in publicly inspected, but not grant-aided, secondary schools, and in others that were neither inspected nor grant-aided.[3] The total number of enrollments in secondary schools was therefore somewhat higher than indicated by the census.

In the matter of secondary school instruction, more importance is attached to local initiative and to the development of the individual school than to uniformity of teaching practice and courses of study. Board of Education recommendations with regard to the curriculum are therefore quite general. The course of study is mainly academic: English is regarded as the prime subject, foreign languages occupy a prominent place, and science and mathematics rank next in importance. All London secondary schools teach Latin, and about 20 per cent of them offer Greek as well. Other subjects suggested by the Board of Education are history, geography, music, drawing, and the Scriptures. The curriculums also include manual arts, physical education, organized games, and sports.[4]

The transfer to secondary schools is conditional on the passing of an examination. But since secondary schools charge tuition, the selection of their student body does not rest on competence alone. The Board of Education, however, requires that each year 25 per cent of the students be chosen independently of their ability to

[3] Exact figure not ascertainable.

[4] Bent and Kronenberg, op. cit. pp. 400–01.

pay the prescribed fees. This percentage is frequently exceeded, and fewer than half the pupils pay full tuition. Nevertheless, a large part of the student body is chosen from those who, in addition to their ability to pass the examination, can be expected to pay the fees; thus many children with greater aptitudes, but less fortunate financial status, must forego an extended education. It is true that some progress has been made in remedying this situation: in 1913, the ratio of all secondary school pupils twelve to fourteen years of age to elementary school pupils in the same age brackets was 1:14, in 1926, it was 1:9.3, and in 1937, 1:5.3.

Secondary school careers in England are frequently not completed. Indeed, the attendance figures show a high rate of dropouts among fifteen-year-olds, and an even higher rate among sixteen-year-olds. In 1938, enrollments in grant-aided secondary schools were made up of 84,900 thirteen-year-olds, 71,290 fifteen-year-olds, and 44,686 sixteen-year-olds. The apparent dropout rate of more than 40 per cent over a period of four years in such a selective group seems rather high.

SWITZERLAND

Though Switzerland contributed many great educators—Pestalozzi, Fellenberg, Zellweger, Wehrli, and others—the school system of their day was surprisingly poor. Swiss schools of the early nineteenth century did not meet with even modest educational requirements, the teaching profession did not exist as such, and school instruction was rather like a sideline engaged in by men who had a few spare hours from their regular business pursuits. Not until after the revolution of July 1830 in France, which acted as a signal to all progressive forces in Europe, did the impulse for more and better education gain ground. This period of 'regeneration' in Switzerland witnessed the development of a public school system worthy of the name.

During these decades, one after the other of the twenty-five Swiss cantons and municipalities took over the organizations of schools and developed them to remarkably high levels. The result

of cantonal initiative was a colorful variety in the school system. Proud of their achievements, the cantons fought hard to maintain their independence in educational matters, and they won their point when the Federal Constitution of 1874 declared schools to be a cantonal responsibility.

One restriction, however, was imposed by the Constitution on the cantons' freedom of choice. The principle of compulsory primary school attendance, to be given free of charge in public schools, was laid down as binding on all cantons. In 1902, constitutional provision was made for an annual federal contribution to the cantons for the maintenance of their public schools, but no further restrictions of cantonal independence were imposed. In addition to the prescribed free instruction, free school materials are provided by most of the cantons; the more progressive cantons also guard the physical welfare of the children by providing, whenever necessary, food, medical care, and vacations.[5]

School attendance is compulsory in most cantons for the eight years between six and fourteen or seven and fifteen. Some few, however, require either seven or nine years.[6] The primary school is common to all children for six years in most cases, though in some cantons it is five, and in a few only four. The majority of the children complete their required formal education in other primary schools; the rest enter one or another of the various types of schools established by the different cantons.

The *Sekundarschulen* or *Bezirksschulen*, set up in many cantons, may best be compared with the German *Mittelschulen*. These schools start with the fifth, sixth, or seventh primary grade and extend through a ninth or tenth year. The curriculum includes more mathematics and science than are offered in primary schools, and a second 'national' language. Since there are four national lan-

[5] Otto Wettstein, *Die Schweiz* (Aarau, 1934), pp. 150–51; Georges Werner, *Suisse*, in 'La Vie juridique des peuples,' ed. by H. Levy Ullmann and B. Mirkine-Guetzévitch (Paris, 1935), pp. 64–7.

[6] Walter Guyer, 'Die Volksschule der deutschen Schweiz,' in *Erziehungsgedanke und Bildungswesen in der Schweiz* (Frauenfeld and Leipzig, 1936), pp. 95–114.

guages in Switzerland—German, French, Italian, and Romanch[7]—each spoken by a part of the population, the mastery of a second language has special importance.

Students who neither remain in primary school, nor enter a *Sekundarschule* or *Bezirksschule*, transfer after four or six years of primary school attendance to a secondary school proper, which, in Switzerland, is called a *Mittelschule*. These schools are often divided into separate institutions for the upper and lower grades. Graduation usually takes place when the student is between eighteen and twenty, and it is a prerequisite for admission to a university.

Secondary schools are either cantonal or municipal; in either case, supervision is exercised by a cantonal educational director. Annual meetings of these directors serve as a unifying element in the administration of school matters. Another influence for uniformity is the regulation by the Federal Council of 1925 of the educational requirements for students planning to enter medical, dental, veterinary, or pharmacological professions. Admission to these faculties, or to the Federal Technical University in Zürich, the only school of its kind in Switzerland, is dependent on observance of these federal requirements.

As a result of these influences, curriculums are fairly rigid. There are, however, three distinct types of secondary schools: the classical, with the main emphasis on Greek and Latin; the semiclassical, featuring Latin and modern languages; and the scientific, with mathematics and science constituting the core Graduates of the scientific school must pass supplementary examinations in Latin for admission to medical and allied faculties.[8]

The distribution of pupils among primary and secondary schools in 1939–40 may be seen in the following figures.[9] Assuming that each age group contains about 65,000 children, and that there are

[7] Spoken in some parts of the Canton Grisons.

[8] E. L Bähler, *Die Organisation des öffentlichen Schulwesens der Schweiz* (Zürich, 1932), pp. 4–7

[9] Computed from *Statistisches Jahrbuch der Schweiz*, 1940 (Berne, 1941), pp. 306–9.

	Primary schools	*Bezirks-schulen*	*Lower secondary schools*	*Upper secondary schools*
Boys	230,863	24,928	14,051	12,073
Girls	224,698	24,381	9,602	3,279
TOTAL	455,561	49,319	24,103	15,352

eight grades in the average primary school, it may be surmised that almost the whole of the potential school population attend the lower grades, and about 80 per cent the higher grades, of the primary school. The figures for secondary school attendance are correspondingly low, showing that the vast majority of Swiss children receive only primary education. Only 10 per cent of the twelve to nineteen-year-olds attend secondary schools, and yet this is the best showing of all European countries, with the exception of Denmark and Norway.[10] Less than 20 per cent of each appropriate age group is enrolled in *Bezirksschulen* or lower secondary schools, and only 6 per cent in upper secondary schools. Graduates of upper secondary schools account for about 3 per cent of the proper age group.

U.S.S.R.

Though the system of education and training in the Soviet Union has an important place in any comparative survey of Europe, it cannot be described and analyzed with the accuracy that is possible in the case of other countries, because of Soviet curbs on the freedom of research and publication. Official statistical data are available, but they are so carefully selected that the real trends, aims, and results can be discovered only after considerable sifting, and then not too accurately.

The Soviet task of education and training was, of course, shaped by its revolutionary context. Its main objective was to convey to an illiterate people the rudiments of knowledge and sufficient general education to enlist their cooperation in the transformation of the political structure of their society and in the industrialization of an almost completely agrarian economy; in the final analysis,

[10] Guyer, op. cit. p. 97.

education was to enable the Soviet regime to function successfully and to endure.

Between the twenties and the thirties, the character of the educational system altered considerably. Dominated in its early stages by the principle that 'life must teach,' the system produced interesting, and in some cases confusing, experiments, which, however, have long since been abandoned. The inauguration of the first Five-Year Plan in 1928, and even more definitely that of the second Five-Year Plan in 1932, marked the start of a new era in education.

Education is the responsibility of the Commissariat of Education in each of the republics; there is no central Commissariat of Education for the entire Soviet Union. Actually, however, there is a high degree of centralization. In the first place, there is a central committee which deals with the problems of higher education in the Soviet Union as a whole. Furthermore, the Central Planning Commission of the U.S.S.R. has a cultural section which decides on the number and kinds of schools to be built, the number of teachers to be employed, the number of libraries to be established, and sums to be appropriated from the central treasury to each republic for educational purposes. And finally, the Commissariat of the Russian Socialist Federated Soviet Republic (which includes the greater part of the population of the Soviet Union) exerts a strong influence on the work of the commissariats of the other republics in such matters as textbooks, curriculums, and length of the school day.

The rapid expansion of school attendance between 1914 and 1939, both in absolute numbers and relative to the entire population, may be seen in the following figures.[11] It is also clear how much of the expansion was concentrated in the latter part of the period between the two world wars. This was the decade in which

[11] Compiled from *Socialist Construction in the USSR*, Statistical Abstract, ed. by the State Planning Commission of the USSR, English translation (Moscow, 1936), p. 397, and *Socialist Construction* . . . in Russian (Moscow and Leningrad, 1939), p. 116.

	Total population	*School enrollments*	*School enrollments in % of total pop.*
1914	139.3 million	7.8 million	5.6%
1928–29	154.3	12.1	7.9
1930–31	—	17.7	—
1933–34	165.7	22.1	13.3
1935–36	—	25.5	—
1938–39	170.5	31.4	18.4

universal school attendance became really effective in the Soviet Union.[12]

General education is provided on a full-time basis by primary schools, preliminary secondary schools, graduating secondary schools, and institutions of higher learning. In addition, there is the special secondary school called the '*technikum*' which has no exact parallel in other European systems, and is, according to a competent Soviet author, on a lower level than the American high school.[13] Primary schools and both types of general secondary schools all start with the first grade. They are, therefore, parallel schools with regard to the grades they have in common, and are differentiated only by the number of grades included: the primary schools have four, the preliminary secondary schools seven, and the graduating secondary schools either nine or ten. The preliminary secondary schools correspond to American elementary schools; for the eleventh and twelfth grade of the American high school there is no equivalent in the secondary school system of the Soviet Union.

The Soviet school system is a ladder system. Students in primary schools can transfer to the corresponding grades of the preliminary secondary or of the secondary schools; after completion of a preliminary secondary school course, students may transfer to the eighth grade of a secondary school. Initially, the Soviet Union did

[12] At the same time, much was accomplished in the field of adult education, in which Communist party institutions played a large part.

[13] A. Pinkevitch, *Science and Education in the USSR* (London, 1935), p. 51.

away with social class distinctions within the school system and the restriction of secondary education and higher learning to the wealthy. Then, contrary to the Soviet Constitution of 1936 (Art. 121), however, which provided for education free of charge on all levels, an order of the Council of People's Commissars of 2 October 1940 introduced rather high tuition fees for the upper grades of secondary schools, *technikums*, and universities.[14] The Constitution, as amended in 1947, legalized this situation and restricted free education to the first seven grades.[15] Another innovation of the war years was the introduction, at the beginning of the school year of 1934–44, of separate classes for boys and girls in seventy-two large cities.[16]

It is to the prodigious growth of the primary school that the rapid decrease in illiteracy[17] may be largely attributed. Starting at the relatively advanced age of seven (before the outbreak of the German-Russian war, at eight), compulsory school attendance is required for seven years. The shift in distribution of pupils among various grades between 1932 and 1939 may be seen in the following figures.[18] Substantial progress was made in this interval toward a much greater absolute and proportional attendance in the fifth to tenth grades. But even in 1938–39 the limited secondary education provided by the Soviet schools was extended to only a small percentage of the population. Whereas there were an average of

[14] *The Soviet Union Today*, ed. by the American Russian Institute (New York, 1943), pp. 50, 54; *American Review on the Soviet Union* (February 1941), p. 67. John Somerville, "Educational System," in *USSR, A Concise Handbook*, ed. by Ernest J. Simmons (Ithaca, 1947), p 326.

[15] Embassy of the Union of Soviet Socialist Republics, Washington, D.C., *Constitution (Fundamental Law) of the Union of Soviet Socialist Republics . . .* (December 1947), p. 34.

[16] *The Soviet Union Today* (cited above), pp. 52–3; Somerville, op. cit. p. 327.

[17] In 1914, 28 per cent of the population over nine years old could read and write; the census of 1939 reports 81 2 per cent of the population of and over school age as literate (90.8 per cent of the men and 72.6 per cent of the women), figures which disclose marked accomplishment but also show that the Soviet Union is still behind other European countries. *See* Beatrice King, *Changing Man* (London, 1937), p. 17; *The Soviet Union Today* (cited above), p. 54.

[18] *Socialist Construction . . .* Russian ed. (cited above), p. 118.

	1932–33		1938–39	
	Attendance (in thousands)	*% of total attendance*	*Attendance (in thousands)*	*% of total attendance*
Grades 1–4	17,674.6	83.2%	21,202.4	67.5%
Grades 5–7	3,515.2	16.5	8,780.0	28.0
Grades 8–10	67.1	0.3	1,403.9	4.5
TOTAL	21,256.9	100.0	31,386.3	100.0

5.3 million pupils in each grade of the primary schools, there were no more than 468,000 or 8.8 per cent of that figure in each of the three top grades; in terms of the potential school population for these grades, the proportion would be still lower. Assuming that the 30 million pupils in the first to seventh grades constituted the total potential school population[10] (after the deduction of the small percentage who in every country do not attend school for various reasons), and assuming equal distribution, there would have been 4.3 million in each grade. Instead, there were 5.3 million in each of the grades from the first to fourth, and only 2.9 million in each grade from the fifth to seventh. This indicates that millions of children in the Soviet Union had no opportunity of proceeding to the upper grades, and had to spend the required education period in primary schools.

This imbalance, which on the basis of past progress may be expected to decrease, was more pronounced in rural than in urban schools. This is the more serious, because in 1939 the Soviet Union was still predominantly agricultural, with a population 67.2 per cent rural and 32.8 per cent urban; 22.1 million pupils, or 70.4 per cent of the total, attended rural schools and only 9.3 million, or 29.6

[10] These figures must be interpreted with caution. Whereas they show about 30 million children in the first seven grades in 1938–39, *Izvestia* of 29 April 1940 reported that, according to the census of January 1939, there were 13.8 million in the five age groups, ten to fourteen; *see* Gregory Bienstock, Solomon M. Schwarz, and Aaron Yugow, *Management in Russian Industry and Agriculture* (New York, 1944), p. 123, note 21. If this figure was correct, school attendance in the first to seventh grades could not have been above 20 million.

per cent of the total, were in urban schools. No less than 72.3 per cent of the total rural school population were enrolled in the first to fourth grades; the number of enrollments in the eighth to tenth was negligible. In urban schools, there were 1.3 million pupils in each grade from the first to fourth, 1.1 million in each grade from the fifth to seventh, and 285,000 in each from the eighth to tenth. In the towns, therefore, a normal seven years' school attendance spread over the seven grades was not far from being a reality when the war broke out. Secondary education, on the contrary, in the limited sense of the term in the Soviet Union, was only for a minority even in the towns; the number enrolled in each of the upper grades was only 26 per cent of those attending each of the lower.

During the war and the occupation, many young people were unable to obtain normal schooling. For them a broad system of schools is scheduled to be put into effect. By 1950 the number of pupils in all elementary and secondary schools is to be raised 'to a total of 31,800,000, universal compulsory education being extended to all children from the age of seven both in town and country.' [20]

Teacher training in the Soviet Union is not yet adequate. The primary classes are conducted by teachers who received their education and training in a *technikum.*

It appears then that much has been accomplished toward providing a general school education for the mass of children, who, under the czarist regime, had grown up illiterate, much has also been done to give the adults some rudimentary education. On the other hand, until 1928 the majority of the potential school population in the Soviet Union got no schooling, and from then until about 1936, the majority of the children attending school were enrolled in four-grade primary schools. Only a small minority of the children attended the eighth to tenth grades, and most left school at fourteen or fifteen years of age after seven years' at-

[20] Embassy of the U.S.S.R., *Information Bulletin*, Special Supplement on the Fourth Five-Year Plan (Washington, June 1946), p. 17.

tendance. Elementary and secondary education still fall far below the level in other European countries and the United States.[21]

Curriculums are centrally approved by the People's Commissariats of Education of the constituent republics and are the same everywhere, except for minor differences between urban and rural districts, and between Soviet Russia proper and the other republics. For one thing, the school year in the towns is generally 40 to 42 six-day weeks; in rural districts it runs 36, 37, and 38 seven-day weeks for the low, middle, and upper grades respectively—a pedagogically unfortunate arrangement.

The regular curriculum for urban schools in the prewar years[22] laid great stress on the mother language (Russian, in Soviet Russia proper) or on the native tongue and Russian, in addition, in the other republics. It also accorded strong emphasis to mathematics and scientific subjects, such as nature study (botany, zoology, and biology), physics, and chemistry. History was amply represented, especially in the upper grades, but the more than 90 per cent of the students who left school at the completion of the seventh grade or earlier, received no instruction in modern history, since the syllabus for the fifth to seventh grades included only ancient and medieval history, ending with the English Revolution. In line with European practice, instruction in one foreign language started in the fifth grade. Physical culture was granted little time, but, like military studies, this was more strongly stressed during the war, especially for boys.

In building up a common public school covering all grades, and in stressing the mother language, mathematics, and scientific subjects, the Soviet system resembles the American. It differs, however, from the American structure in its strong centralization, and

[21] With regard to preschool education in kindergartens, which took children from three and one-half to seven years of age, the Soviet figures likewise indicate a great increase. In 1934–35, however, 1.2 million children (689,000 of them in cities), or less than 10 per cent of the approximate number of children in each age group, attended kindergarten. The number of children accommodated in kindergartens in 1950 is to be increased to 2.26 million or double the *1940 figure* (Embassy of the U.S.S.R., op. cit. p. 17).

[22] *See* King, op. cit. p. 312.

in not granting the pupils any choice of subjects, there are no electives except the choice of one of several foreign languages.[23]

Soviet propaganda is an ever-present element and pervades all subjects. With regard to the quality of the instruction, the home environment of illiteracy from which most of the children come, and the probable lack of thoroughly trained teachers, which is not surprising in view of the vast and rapid expansion of schooling, serve to explain why the level of general education appears to be below that of schools in other countries. These shortcomings, however, may disappear in the course of time.

The 'polytechnical' side of education and training in the Soviet Union deserves particular mention. Frequently emphasized by Soviet educators and writers, it aims to 'acquaint the pupil with the basic principles of all processes of production'; at the same time it is designed to 'give the child and adolescent habits of handling the simple tools of all production.'[24] The term 'polytechnical' includes all the courses referred to in the body of this study as manual and industrial arts, and certain other prevocational activities with modern machinery. Soviet educational administrators facilitated a broader application of the manual training idea by making each school an annex of a shop, thus furnishing opportunities for contact between schools and factories, for the use of machinery, and for visits to workshops.

The curriculum bears witness to this interest by including one hour a week of 'handwork and manual work' in each of the four lowest grades, and two hours a week in each of the middle and upper grades. According to Russian terminology, 'handwork' is work done in a workroom with such materials as paper and cardboard, using scissors and knives, while manual work is done in school workshops with wood and metal, using lathes, benches, machines, and the like. Handwork is done in the lower and middle grades, while manual work, including the use of machinery, is

[23] It is interesting to note that since November 1945 Latin and Greek have been added to the languages offered.

[24] Quoted from Karl Marx and Friedrich Engels, *Collected Works*, vol. 18, in *The Soviet Union Today* (cited above), p. 50.

reserved to the upper grades.[25] It is likely, however, that only in exceptional cases can school workshops be adequately equipped for such work, and excursions to factories furnish the pupils only occasional opportunities to observe work there and to handle certain tools. These rudiments of 'polytechnical' training can nevertheless be considered an interesting and promising start.

[25] Since the suppression of coeducation in the large towns, girls usually do needlework instead of 'manual' work.

APPENDIX II

Notes on In-School Vocational Education and Training in Selected European Countries

GERMANY

EARLY in the nineteenth century, when the average school-leaving age in Germany was still lower than the current level of fourteen, and even later when the minimum age for leaving school was set at fourteen by most German states, it was recognized that the education of children had to be prolonged for several more years. The result of this awareness was the development of the continuation schools. In their earliest form these were Sunday schools confining themselves to religious education. Gradually they undertook to repeat and supplement the elementary instruction of children who, after somewhat irregular school attendance in rural areas, entered employment in urban centers. For example, boys who entered on apprenticeships were required to know reading, writing, and arithmetic, and employers were required to see that they received adequate instruction in these subjects.

Following the foundation of the German Reich in 1871, federal legislation authorized the municipal authorities to enforce attendance at continuation schools of all male journeymen and apprentices under eighteen years of age, and to compel employers to grant employees the time necessary for attendance at these schools. Thus the continuation schools emerged as part-time day schools.

With the changes in technology and in the economic structure, instruction in the German continuation schools reached beyond the bounds of general education to include subjects that were directly useful to young workers. Eventually, separate industrial

and commercial continuation schools were created, and several states ruled that apprentices or other young workers might attend these institutions instead of a general continuation school. The most progressive continuation school policy was conducted by the state of Württemberg which in 1906 required that all localities, in which at least 40 boys below the age of eighteen were employed in industrial or commercial enterprises, had to establish industrial or commercial continuation schools.

As industry developed, and education in vocational and related fields became increasingly important, more and more schools became training centers for industrial, agricultural, mining, and other vocational pursuits, instead of general education institutions. Accordingly, the continuation school or *Fortbildungsschule* changed its name and became known as a *Berufsschule* or vocational school.

The Weimar Constitution (1919) made the continuation school a part of the general school system for the entire Reich, by ruling (Art. 145) that all children between the ages of fourteen and eighteen had to attend continuation school, if they were getting no other schooling in that interval. But since no federal law was adopted to implement this article of the Constitution, the German states continued to regulate continuation school attendance and organization rather independently. The number of pupils increased considerably; in 1931, enrollments totaled more than 1.2 million, one-third of whom were girls.

The industrial vocational school (*Gewerbliche Berufsschule*) constituted one of the main divisions of this branch of education. In the large cities almost every major trade had at least one school of this type. There were also private vocational schools called *Werkschulen*, conducted, for the most part, by large plants but, like the municipal schools, operated under the supervision of state educational or economic authorities.

Courses in these schools were generally three years in length, except those leading to agricultural occupations, which were only two years. Apprentices in industry and crafts had to attend for the full term of their apprenticeship which was, in most cases,

four years. Before World War I, instruction occupied four hours a week; under the Republic it was extended to six, and in a few states or municipalities one hour or even more were added to this prevailing number.

Despite many minor differences among the states, the programs and courses of the various branches of vocational schools achieved a certain uniformity throughout the country. Subjects were classified as vocational, managerial, and civic. In Prussia, an average of three hours weekly were devoted to vocational subjects, two to managerial, and one to civics. States or towns which set up schedules of seven or eight hours usually extended the instruction time devoted to vocational subjects. In some of the smaller states, instruction in civics was sometimes reduced to even less than the scant amount given in Prussia.

Vocational subjects included drawing, modeling, geometry, algebra, science, characteristics of materials, use of materials, and some shopwork, which was especially valuable for apprentices in small shops equipped with only limited machinery. Managerial subjects were written and spoken German, bookkeeping and accounting, and home management. As is demonstrated by the negligible time devoted to it, civics was slighted almost as much as in the elementary schools.

Prior to World War I, the Munich vocational schools, under the direction of Georg Kerschensteiner, whose work attracted worldwide attention, developed an exemplary program of vocational subjects and civics. On the whole, however, despite the undeniable progress of the part-time vocational schools under the Weimar Republic, the success of this type of school was limited, mainly because of insufficient instruction time.

The National Socialists made very few changes in the vocational schools. Instruction time was slightly increased and apprentices were required to spend from six to ten hours a week in school, depending on the trade. Attempts to impose a uniform technical curriculum throughout the Reich met with little success, but the civics courses were widely used for Nazi indoctrination. The fac-

tory schools were not regarded with favor by the National Socialists, with the result that many of the leading firms abandoned these projects and sent their apprentices to the city-operated vocational schools.

A highly developed system of school training was that provided by the German technical institutes (*Fachschulen*), which were designed to enable experienced and gifted workers to acquire additional technical education. This type of schooling, which these workers availed themselves of after an apprenticeship and a year or two of journeyman's work, was necessary, since the majority of workers had had only eight years of formal education which provided no adequate preparation for technical work. Technical institutes were first established in the 1880's when it was recognized that industry could not be effectively promoted without a more elaborate technical training.

A great number of technical institutes in the metal and building industries were created as state institutions; others were set up for textiles, crafts, and commerce by municipalities, but were, for the most part, subsidized by the state and conducted according to the same directives. Mining schools were established by the associations of entrepreneurs in the field of coal mining, but since Prussia was the largest owner and entrepreneur of coal mines, it exercised a notable influence on the development of these schools too. In other states, similar developments took place. Accordingly, the influence of public officials on these schools was substantial, especially in the fields of agriculture, industry, and crafts.

The main branches of technical institutes in industry and commerce were: machine and metal institutes (*Metallfachschulen*); schools for the building trades (*Baugewerksschulen*); textile institutes (*Textilfachschulen*); mining institutes (*Bergschulen*); the institutes for crafts and applied arts (*Kunstgerwerbe und Handwerkerschulen*), which offered a great variety of courses; and commercial schools (*Handelsschulen*). This by no means exhausts the list. There were also a great many other institutes or *Sonderfachschulen*, specializing in such fields as woodworking, chemical

work, papermaking, ceramics, leather work, and shoemaking. Other specialized institutes were created to serve local industries or enterprises. For example, an institute for opticians at Jena served the Zeiss Company; Saxony, Württemberg, and Baden had institutes for watchmakers. All these special institutes were smaller in number than those included in the large industrial groups, but even so not negligible. Their real importance, however, lay not in their number, but in the services they rendered to local industries or crafts, which were sometimes essential to the economy of the region or even the nation.

Unlike the continuation or vocational schools, the technical institutes offered full-time training. Only those schools which were attended on a voluntary basis, and which trained for a specific vocation by full daytime instruction for a period of at least one year were to be considered *Fachschulen.*[1] In actual fact, these stipulations were not always strictly observed, and even evening schools were not denied classification as technical institutes if they complied with the other requirements.

In general, admission to technical institutes demanded the completion of both elementary school and an apprenticeship; in some cases, vocational activity of several years' duration was considered an acceptable substitute for apprentice training. In several fields, however, technical institutes were set up on two different levels with different admission requirements. There were, for example, institutes of advanced instruction in the metal and machine trades, textiles, commerce, and agriculture. Admission to these was confined to persons who had successfully completed six years of secondary school, that is, a total of ten school years, and at least two years of apprenticeship. Access was made possible to applicants, with only eight years of schooling but four years of apprenticeship, by giving them a full-year preparatory course.

Thus the institutes could take for granted a common vocational background and could plan curriculums and instruction accord-

[1] According to a resolution of the *Reichsschulkonferenz,* a meeting of educators and administrators of the highest authority, held in 1920.

ingly. In some mining schools there existed a cooperative system whereby part of the time was devoted to school attendance and the rest was spent on practical work. Students enrolled in the institutes for the building trades often worked during the summer to earn the money for school attendance extended over several winters.

The number of students attending all public technical institutes in 1931 was 170,320. What proportion of these were male students cannot be ascertained precisely, since the figures for the largest state, Prussia, were not divided by sex. It can be assumed, however, on the basis of detailed Prussian figures for 1926 and of the 1931 figures for other states, that at least 100,000 were male. The total number of students attending public technical institutes for industries and crafts was 67,000, of whom about 55,000 can be assumed to have been male. Among the 43,000 students in the schools for commerce and transportation, on the other hand, the majority (about 26,000) were female.

No exact data are available on students of private technical institutes. Figures for private institutes in Prussia in 1926 show that they were then unimportant in the fields of industry and crafts, numbering not more than 4,000. In later years the enrollments grew, because for a long period all state and municipal institutions were filled to capacity. The value of many of the private industrial and craft institutes was contestable, however. The private commercial schools played a bigger role, with enrollments of 13,072 in 1926, among whom 6,175 were female.

Among the largest branches of the public technical institutes for industry and crafts were the institutes for the building trades and the machine industry, each group enrolling about 10,000 students, the institutes for the textile trades (more than 6,000), and the institutes for the metal industry (about 5,000). In order to give some idea of the teaching in these schools, typical curriculums of technical institutes for machine and advanced machine construction are reproduced in Table 3. The former covers four terms of twenty weeks over a period of two years, the latter, five such terms over a two-and-a-half-year period. The six-day week with seven

periods a day is a heavy program, requiring great energy and application on the part of the student.

In many subjects, especially those devoted to machines and technology, the instruction includes both theory and practice. The two curriculums differ in a number of ways, mainly because that of the advanced institutes presupposes a body of knowledge which students in the other schools have still to acquire. Thus German is

TABLE 3. WEEKLY HOURS OF INSTRUCTION IN TYPICAL CURRICULUMS OF GERMAN TECHNICAL INSTITUTES FOR MACHINE AND ADVANCED MACHINE CONSTRUCTION [a]

Subject	*Machine Construction* [b]				*Advanced Machine Construction* [c]				
	Terms: I	II	III	IV	Terms: I	II	III	IV	V
German	4	—	—	—	—	—	—	—	—
Econ., civics	2	1	1	2	2	2	1	1	—
Mathematics	14	5	2	—	8	6	4	—	—
Physics	4	2	—	—	4	2	—	—	—
Chemistry	4	—	—	—	4	—	—	—	—
Prep. Drawing	11	—	—	—	—	—	—	—	—
Mechanics	—	5	4	2	6	6	6	—	—
Descript. Geometry	—	—	—	—	7	—	—	—	—
Machine parts	—	16	4	4	6	12	12	—	—
Power machines	—	—	9	11	—	—	—	13	14
Hoists, cranes, etc.	—	—	2	3	—	—	—	9	8
Electricity	—	4	4	4	—	2	4	4	12
Construction, plant	—	—	—	3	—	—	4	6	—
Technology	2	6	9	8	3	10	7	3	2
Lab. exercises	—	2	4	4	—	—	2	4	4
Physical culture	2	2	2	2	2	2	2	2	2
TOTAL	43	43	43	43	42	42	42	42	42

[a] Compiled from Rudolf Horstmann, 'Die Metallfachschulen,' in Alfred Kuhne, *Handbuch fur das Berufs- und Fachschulwesen*, 2nd ed. (Leipzig, 1929), p. 339.

[b] Four terms of 20 weeks, over 2 years.

[c] Five terms of 20 weeks, over 2½ years.

taught only in the lower institutes, which also offer more mathematics (including arithmetic) than the advanced schools, and teach it in a more elementary way. Preparatory drawing also is taught only in the lower schools, while descriptive geometry is offered only in the advanced institutes. The broader background of the students attending the advanced institutes and the five-term curriculum allow more time for mechanics, and for work on machines, and on machine and plant construction. Students who graduate from the institutes for advanced work have, of course, technical skills and knowledge that enable them to take more complicated technical jobs than graduates of the lower institutes.

The work of the German technical institutes has played an important role in the total system of occupational training and technical education. Whereas graduates of technical universities were educated mainly for research and experimental work, the graduates of technical institutes were usually entrusted with the planning and supervision of production, and they comprised the great body of technicians, draftsmen, designers, supervisors, and foremen. Since the number of persons who attended the technical universities was extremely small (under 10,000 in 1937–38), the German system of drawing on the rank and file of skilled labor for the practical engineering positions furnished the only possible solution of the production problem.

Great Britain

Full-time in-school vocational education is but slightly developed in Great Britain. It has no place, of course, at the elementary level, where it would be out of order in view of the age groups involved, or at the secondary level. Since 1904, however, efforts have been made to introduce a type of vocational school into the educational system; the result of these efforts is the junior technical school.

Junior technical schools developed from the daytime technical classes, which from 1904 to 1912 were conducted within the framework of the secondary schools; they became separate institutions

only in 1913. Their rise from then on was slow. In 1935, there were 194 schools with 24,000 pupils; in 1938, the number of pupils had increased to 28,000.[2] Enrollments in these schools in percentages of the potential school population were as follows: 0.8 per cent of the thirteen to fourteen-year-olds; 1.6 per cent of the fourteen to fifteen group; 1.4 per cent of the fifteen to sixteen group; and 0.4 per cent of the sixteen to seventeen group. The junior technical schools are not a part of any ladder system. For the most part, they are entered at the age of thirteen or fourteen, though in exceptional cases at twelve. Students are admitted by entrance examinations in English, mathematics, drawing, and sometimes handicrafts. Most courses are two years in length, for children from thirteen to fifteen; some are three years, for twelve to fifteen-year-olds; very few schools offer three-year courses to those entering at thirteen. The junior technical schools do not prepare for university entrance.

There are four types of junior technical schools: preapprenticeship schools, which prepare for specific industries; junior technical trade schools, which prepare for specific occupations; junior housewifery schools preparing for household management; and junior commercial schools leading to careers as 'shorthand typists' and clerks of various kinds. In 1938, excluding the housewifery and commercial schools, only 17,771 boys and 2,177 girls were receiving this kind of in-school vocational preparation for entrance to industry.[3] Nearly one-third of the preapprenticeship schools, as well as three-fourths of the trade schools, were located in the metropolitan area; about half of the two groups had less than 100 pupils each, and 97 out of a total of 124 had less than 200 pupils each.

Of the preapprenticeship schools, which had an enrollment of 16,500 in 1938, the great majority prepared for the metal and ma-

[2] Computed from Appendix I, Table 2. The enrollments listed there include schools of nautical training and junior departments of art schools.

[3] Computed from *Education in 1938*, Report of the Board of Education and Statistics of Public Education for England and Wales (London, 1939), Table 59, p. 155.

chine, and building industries, a few for the chemical or mining industries. A small number of schools, comparable to the American vocational high schools of the general industrial type, prepared for unspecified industrial occupations. As for the trade schools, in which enrollments were very low (only 3,300 in 1938), the occupations taught were mainly cabinetmaking, printing, tailoring, the needle trades, boot and shoe manufacturing. Hardly any trade was taught in more than two schools in the country.

The preapprenticeship and trade schools require no final examination for graduation, nor are they operated according to any uniform standards. Teachers are selected according to their experience in the occupations for which the schools prepare. Contacts are established between the schools and industries through industry representatives who serve on advisory committees or on the Board of Governors, or by close relationships between the head teachers and the local and regional firms.

The hours of instruction per week in an average preapprenticeship school curriculum are as follows: English, history, and geography, 6, mathematics, 6; science, 6, technical drawing, 4; physical training, 2; and craftwork, 6.[4] The time distribution in an average junior technical trade school curriculum is somewhat different: English, history and geography, 5 hours a week; science and mathematics, 5; drawing, 4; craftwork, 14; physical training, 2.[5] General education subjects are not wholly lacking, but are less dominant in the technical trade school curriculum; science and mathematics, offered in the technical schools for 40 per cent of the instruction time, are accorded only 17 per cent in trade schools. Craftwork, on the other hand, occupies almost half the instruction time in trade schools, but is less heavily stressed in the technical schools.

On the whole, the junior technical schools have made a promising start in providing all-day vocational education, but they have

[4] *A Review of Junior Technical Schools in England,* Board of Education Educational Pamphlets No. 111 (London, 1937), p. 18.
[5] Ibid. p. 20.

not gained much strength or popularity and, as the Board of Education put it, are almost unknown to the general public.[6]

Aside from junior technical schools, the only other full-time vocational education institutions in Great Britain are the larger technical and commercial colleges and schools, which prepare for employment in building, engineering, commerce, art, and domestic crafts, with courses lasting a year or more. A large proportion of the 19,000 students, nearly half of whom are women, range in age from sixteen to nineteen, and enter these schools after completing secondary school programs.

In continuation schools, students up to eighteen receive instruction for three to six hours a week in either general education or vocational subjects. Schools and employers sometimes work together in planning the supplementary theoretical instruction for employees.

Though the record of vocational education as a part of the regular school system is far from impressive, the number of persons who voluntarily take additional general or vocational courses is important. In 1938, about 1.2 million students were enrolled in almost 3 million part-time classes, an average of 2.5 classes per student. As a rule, the classes are held three times a week during evening hours from September to March or April. They include all kinds of trade preparation, trade extension, or general education courses, given either as junior courses, two years in length, for boys and girls who have just left elementary school, or as senior courses for those sixteen years of age and over.

The junior evening classes are attended by about one-third of the graduates of elementary schools. The courses cover industrial, commercial, agricultural, domestic, and general subjects. In the industrial classes, boys who have already entered industry learn workshop calculations and blueprint reading, written and spoken English, and the intelligent use of tools. 'The aim of the courses is to continue the pupils' elementary education and to prepare them for more advanced courses in technical schools, but, as the Board

[6] Ibid. p. 14.

has put it, "no high efficiency can be claimed for junior evening arrangements as an educational system."'[7] Thirty-five per cent of the students, indeed, do not go beyond the first year, and 40 per cent of the remainder do not go on to take the advanced courses.

The senior courses, attended by 900,000 in 1938, of whom 55 per cent were over 21 years of age, provide opportunities for persons engaged during the day in industry and commerce to increase their theoretical and practical knowledge, their general education and vocational background. English, languages, and social science are offered, as well as mathematics and science, industrial, professional, and commercial subjects, art, music, and physical training. Among the industrial subjects are mining, chemical trades, engineering, and the metal trades, textile trades, clothing trades, food and drink trades, book printing and paper trades, building, woodworking and furniture trades.

In view of the miscellaneous character of the instruction it is difficult to determine the exact contribution of these schools to the vocational training of the gainfully occupied population. Some skepticism about their value has been expressed.[8]

The British educational system has provoked much criticism, and various proposals for reform. Outstanding are the suggestions made during the war by the New Fabian Research Bureau in London and the Nuffield College Social Reconstruction Survey at Oxford.

These groups opposed in-school vocational education and training at the secondary level, but recommended compulsory part-time continuation education, including vocational subjects, until workers reached the age of eighteen. They further suggested that in view of the strain of 'night school,' a considerable amount of the daytime should be released for purposes of study, and that employers should so arrange the work schedules that trade apprentices

[7] Barbara Drake and Tobias Weaver, *Technical Education,* New Fabian Research Bureau (London, 1936), p. 9.

[8] Ibid. p. 10.

up to the age of eighteen could devote half their work time to education, including vocational education, and a smaller proportion of working time thereafter.

The rapid development of junior technical schools was also proposed by both groups. The Fabians wanted them to become technical secondary schools admitting pupils at the age of eleven and offering an advanced course leading to a university or higher technical college. The Nuffield College Survey insisted on facilities for an easy transfer from one type of school to another and expressed a preference for junior technical schools that would not be narrowly vocational, as opposed to specialized trade schools. It stated, however, that direct trade training should be the main goal of apprentice training in industry, but should be largely supplemented by part-time education.[9]

SWITZERLAND

Vocational in-school education in Switzerland stems from the work of Philipp Emanuel von Fellenberg, who was the first to see the connection between a democratic government and an intensive, well-planned, and purposeful vocational education. Following the suggestion of Pestalozzi, early in the nineteenth century he founded on his estate near Berne an institution for the poor, in which general education was combined with work in agriculture. Other similar schools developed, for the crafts as well as for agriculture. Craftsmen and businessmen also created Sunday schools in which drawing and modeling and other subjects pertinent to the enlargement of vocational knowledge were taught. In connection with local crafts and industries, special vocational schools developed in urban centers, among them schools for drawing and modeling at Basel, for industrial arts at Lucerne, for furniture and weaving at Zürich, for watchmaking at Geneva and Neuchâtel. While most of these were born of the initiative of economic and vocational associations, others were founded by individual enter-

[9] Nuffield College, Oxford, *Industry and Education* (Oxford and London, 1943), pp. 31–8.

prises in order to build up a steady supply of skilled workers.

Much more systematic was the growth of the continuation schools, which were originally designed to review and supplement primary school education for employed persons, by means of instruction on a part-time basis. Continuation schools were matters of cantonal discretion until 1930 when federal law created the term *Berufsschule* (vocational school) for industrial and commercial continuation schools and made attendance at these schools compulsory for all apprentices. The cantons remained free to regulate attendance of nonapprentices.

The continuation schools increasingly developed from refresher institutions for general education into schools for specialized vocational training. The following figures reveal the size of enrollments and the distribution of students among the various types of continuation schools during a recent decade.

	Gen.	*Indus.*	*Comm.*	*Agr.*	*Home Econ.*
1928–30	31,629	49,804	21,060	4,697	35,440
1934–35	25,529	52,468	16,380	8,792	43,378
1939–40	18,122	48,468	16,248	9,937	47,391

The slight absolute decline from total enrollments of 142,630 in 1928–29 to 140,166 in 1939–40 constitutes a proportional increase, since the average potential continuation school population was smaller in 1939–40 than in the earlier periods because of the lower natality. The figure of 140,000 indicates that more than half the potential school population (including a majority of all boys and a minority of all girls) between fourteen and eighteen attend continuation schools. Special continuation school attendance increased at the expense of general continuation school attendance. The number of students in agricultural continuation schools more than doubled; in home economics it increased by more than 30 per cent; the number of those enrolled in industrial continuation schools remained stable.

Federal law, enacted in 1930, provides that apprentices must attend continuation school for 200 to 300 hours a year, or, if drawing

and practical instruction are not required, 160 to 240 hours, for the duration of apprenticeship. Theoretical and practical instruction related to each trade is prescribed; subjects include drawing, shop mathematics, commercial correspondence, bookkeeping, civics, and economics. The cantons are free to include additional electives. Federal officials established standard schedules, adherence to which, however, is optional.

In addition to the part-time continuation schools, Switzerland has full-time vocational schools for skilled and intermediate occupations. Attendance is on a voluntary basis. In 1939–40, the highest attendance was at commercial schools (4,687 boys and 3,368 girls) and the schools for home economics and women's work (8,704). The 38 trade and industrial schools, in contrast, had only 2,612 students, and the 6 *technikums* (technical institutes) 1,816—figures that do not suggest a strong position for these institutions in the training system of the country.

An interesting feature of the in-school training system is the 41 public apprenticeshops (*Lehrwerkstätten*), which function under the supervision of the federal government. Apprenticeship training in these shops is similar to that given by a commercial enterprise. The students receive the practical instruction prescribed in the apprentice programs and, in addition, more theoretical instruction than the usual apprentice program affords. K. I. Boeschenstein, a Swiss authority on vocational education, asserts that an apprenticeship shop has a series of advantages which cannot be offered by a practical apprenticeship with related instruction in a continuation school. There are apprentice shops for mechanics, watchmakers, metalworkers, electrical workers, woodworkers, clothing workers, and others. Although they operate on a semicommercial basis, offering for sale the products made by the students, they cannot subsist without the contributions they receive from municipalities, cantons, and the federal government.

The ample opportunities for vocational training in large cantons may be illustrated by the example of Zürich Land, which includes the territory around Zürich but not the city itself. There are, first

of all, continuation classes for specific trades (painting, carpentry, gardening, and the like). The training for each trade is concentrated in a different locality and the students from all over the canton gather there for instruction.[10] A big continuation school is located in Winterthur, the main town of the canton. It offers training in the following fields: mechanical-technical; construction; diverse trades (printing, baking, shoemaking, clothing, and the like); and it gives free courses in languages, business, trade economics, and other similar subjects. A separate section is devoted to home economics and women's vocations. The same town contains a *technikum*, subsidized by the federal government and designed to convey by theoretical instruction and shopwork essential knowledge for technicians in intermediate jobs in trades and industry. There are sections for architects, chemists, technicians (machine work, electrical work, underground construction), and for commerce. The courses, for which fees are charged, last six terms; a minimum age of fifteen, nine years of school attendance, and a year or two of work experience are prerequisite to admission. Graduation includes the right to the legally protected title of 'technician.' A metalworker's school, also in Winterthur, has sections for mechanics, precision work, electromechanics, auto mechanics, and patternmaking. School attendance is a substitute for apprenticeship, and cantonal apprentice examinations are held at the end of three years. Admission is granted on examination to fifteen-year-olds who have had nine years of school attendance. Fees are set according to the financial status of the student. This school also offers additional courses of one to two years' duration, composed mainly of shopwork and intended for students of secondary schools and institutions of higher learning, and for trade extension training of young mechanics.

U.S.S.R.

The rapid progress of industrialization in the Soviet Union, with its attendant shift of population from rural to urban areas,

[10] E. L Bähler, *Die Organisation des öffentlichen Schulwesens der Schweiz* (Zürich, 1932), pp. 21–6.

created a need for centers of training that would build up the body of skilled workers, technicians, and engineers demanded by the new economic structure. The institutions that grew out of this need are the *technikums*, the factory apprentice schools, and the trade and industrial schools. There are also a limited number of engineering colleges.

Boys and girls who complete the seventh grade (last year of a preliminary secondary school)[11] have the choice of proceeding either to the upper grades of a secondary school or to a *technikum*. The latter may best be described as special vocational schools for future semiprofessional personnel. Actually, they are old Russian institutions adjusted to the new conditions in the Soviet Union and not restricted to technological instruction in the narrow sense. There are *technikums* for medicine, pedagogy, art, agriculture, industry, and transportation. Nurses and other medical aides are trained in the *technikums* for medicine, teachers for primary schools in the *technikums* for pedagogy, foremen and technicians, managers and accountants in the *technikums* for industry and transportation. The *technikums* do not constitute the top rung of an educational ladder; transfer to universities or engineering colleges is possible from them as well as from secondary schools.

The *technikums* have played a big part in providing the speedily trained manpower for intermediate jobs, so greatly needed for the rapid industrialization of the country. Their expansion was linked to the policy inaugurated in 1928 of training a great body of specialists. Training was accelerated and the period of study was shortened, the 'workers' nucleus' in the *technikums* was strengthened, and numerous scholarships were granted. But by the middle thirties, and even earlier, these measures were recognized as failures—extreme specialization and acceleration had seriously lowered the level of technical training. Orders were therefore issued to lengthen the instruction period, revise curriculums, and introduce a general system of strict entrance examinations.[12]

[11] *See* Appendix I.

[12] Gregory Bienstock, Solomon M. Schwarz, and Aaron Yugow, *Management in Russian Industry and Agriculture* (New York, 1944), pp. 106–12.

Admission to, and graduation from, the *technikums* training for industry and transportation are reflected in the following figures. These show a rather stable number of graduations, although, except in 1938, the number of admissions declined steadily as a result of the more rigid entrance requirements. Thus, on the whole, the proportion of graduations to admissions improved. But even in the second half of the thirties, graduations never equaled half the admissions. The average length of *technikum* attendance was therefore below two years, which means that most students did not complete the four-year course. The expansion of the Soviet economy, however, absorbed the available manpower so easily that all these students found jobs in which they were able to utilize their training, incomplete though it was.

	Admissions	*Graduations*
1932	124,000	33,600
1933	77,600	31,400
1934	70,800	29,200
1935	65,700	31,900
1936	58,800	27,900
1937	58,100	27,100
1938	69,200	30,500

A four-year course in a *technikum* included general and specialized training. All *technikums* offered Russian language and literature, one foreign language, economics, dialectic materialism, and a group of scientific subjects including mathematics, physics, chemistry, and biology. General education subjects had a sizable place in the curriculum, since the knowledge carried over from the seventh grade of a preliminary secondary school was necessarily imperfect and needed improvement. Professor Pinkevitch indicates that 18 per cent of the instruction time was devoted to general education, 47 per cent to scientific and technological subjects, and 32 per cent to special subjects determined by the student's future vocation.[13] This last group was taught mainly by practical work in

[13] A. Pinkevitch, *Science and Education in the USSR* (London, 1935), p. 58.

a Soviet enterprise, the instruction being given by a specialist and supervised by an educator.

During the first two years, theoretical instruction was given in the form of the usual class lesson, supplemented by independent study, discussions, and excursions. For the last two years, the method of the university lecture system was employed, together with group work and discussions. At the end of the course, a thesis had to be written and publicly defended; only then was a diploma issued confirming the qualifications of the applicant for one of the many positions for which the *technikums* prepare. With regard to the level of education in a *technikum*, Pinkevitch holds that it was below American academic and technical high school standards, but on a higher level than the German schools for skilled workers and in some ways comparable to the German *Polytechnikums.*

The expansion of engineering colleges was not unimpressive during the thirties. Whereas before the first Five-Year Plan was inaugurated only 20,200 engineers were employed in the whole of Soviet industry, between 1932 and 1938, 147,300 students graduated from engineering colleges. During the years of the first Five-Year Plan, 1929–32, only 22 per cent of the students newly admitted to engineering colleges were graduated, but from 1935 on, graduations were not far behind admissions. The Soviet regime has coped with the task of securing trained manpower for top and intermediate positions with increasing success.

The task of training skilled workers for the rapidly expanding Soviet industry first devolved upon the factories. All larger plants created factory apprentice schools in order to meet their manpower needs. Under the first Five-Year Plan, and even later, general education was still so little developed that the requirements for admission to these schools had to be incredibly slight; thus only two years of primary education were required. Only with the improvement of school education was the qualifying period lengthened.[14]

In these circumstances the factory schools found it advisable to devote half the instruction time of the two-year course to gen-

[14] Beatrice King, *Changing Man* (London, 1937), p. 172.

eral education and only half to actual training for industry. The apprentices learned to handle tools, to know the structure of machines and how to operate them, and to read blueprints. The factories supplied suitable workshops, materials, and instructors for the training, which was given in a 40-hour work week.

The emphasis on general education in the apprentice schools aroused so much interest in academic subjects that many of the apprentices wanted to transfer to institutions of higher education, access to which was easy at that time, instead of preparing to work in the factory. In view of the urgent need for industrial manpower, this tendency could not be encouraged. In fact, the need was so great that the government decided in 1933 to reorganize the factory apprentice schools. The training period was reduced from three years to six months, or, in some cases, to a year.[15] The greater part of the training—four to six hours a day—was devoted to preparing for industry; theoretical subjects were offered for only two or three hours a day. (By that time, of course, young people entering factory apprentice schools had a somewhat improved general education.) Though the apprentices were not in principle prevented from later attending institutions of higher learning, they had to complete three years of work in the factory first. It is obvious that so short a training period as six months does not allow for apprentice training in the usual sense; this schooling was comparable to the preparatory training given to operatives, or possibly learners, supplemented by some theoretical instruction. The factory apprentice schools were not considered educational institutions, and therefore operated under the control of the Commissariats of Industry.

By a decree of 2 October 1940 the Soviet Union abolished the whole apprenticeship system and announced a policy of establishing vocational schools to be annexed to factories and to supersede the factory apprentice schools.[16] The plan provided for different

[15] Pinkevitch, op cit. p. 54.

[16] The decree is reproduced in *American Review on the Soviet Union* (February 1941), pp. 67–8.

kinds of training for skilled workers and operatives, who, when trained, were then to be drafted for compulsory labor for a number of years.

Trade schools, railway schools, and industrial training schools were projected, with the aim of creating labor reserves of 800,000 to 1 million persons annually. Trade school and railway school courses were to be two years in length. In the former, skilled metalworkers, metallurgists, chemists, miners, oil workers, river transport and communications workers, and the like, were to be trained. The latter were to furnish skilled railway workers, assistant locomotive engineers, locomotive and car repairmen, boilermakers, crew leaders for track repairs, and others. In the industrial schools, six-month courses of study were to be organized for the training of operatives in the coal, mining, metallurgical, and oil industries, and the building trades.

The facilities of the former factory apprentice schools were taken over for the new trade, railway, and industrial training schools. About 45,000 experienced teachers, industrial training experts, and other personnel are said to have been selected to staff them. Boys who had completed at least the seventh grade were eligible for admission to a trade or railway school; no educational requirements were set for entrance to an industrial training school. In the trade and railway schools about one-third of the instruction time was set aside for theoretical subjects; training in industrial schools was mainly on-the-job training in mines, oil fields, and the like, preceded, in some instances, by some theoretical instruction.[17]

In order to secure a sufficient number of trainees, the chairman of each collective farm was called upon to designate two male youths fourteen and fifteen years of age for the trade and railroad schools, and two sixteen and seventeen-year-olds for the industrial training schools, for every hundred members of the collective farm, counting men and women between the ages of fourteen and

[17] New York *Times*, 7 April 1943; Embassy of the U.S.S.R., *Information Bulletin*, 18 December 1943.

fifty-five. The number to be drafted by the city soviets was fixed annually by the Council of the People's Commissars. The pupils were maintained free of charge. Those who graduated were regarded as mobilized and were obliged to work for four consecutive years in state enterprises at prevailing wage rates, but were exempt from draft into the army or navy.

It is not ascertainable to what extent these measures, designed to provide a sufficient number of trained workers for industry and to distribute them according to planned production, were actually applied. When the Soviet Union was invaded only seven or eight months after the first enrollments, many schools were put out of operation and others had to work under the most abnormal conditions. According to published figures, there were, at one time or another, some 500,000 or 600,000 enrollments in these schools; in 1943 there were 600 trade schools, 120 railway schools, and 800 industrial training schools, and in Moscow from the beginning of the war until the end of 1943, some 30,000 boys between the ages of fourteen and sixteen were trained in 55 such schools.[18] There is no information available on the curriculums, or on the results achieved in teaching practical skills and theoretical background. The system itself is apparently considered successful since it is to serve the fourth Five-Year Plan also. In the law on this plan, adopted on 18 March 1946, it is proposed 'to improve the training of cadres for industry by extending the labor reserve system and the training of new workers on the job.'[19]

[18] See articles cited in preceding note and *Anglo-Russian News*, 18 October 1943

[19] Embassy of the U.S.S.R., *Information Bulletin*, Special Supplement on the Fourth Five-Year Plan (Washington, June 1946), p. 4.

APPENDIX III

Notes on Apprenticeship in Selected European Countries

Germany

As in most European countries, apprenticeship in Germany was well developed long before industrial production prevailed in the economy, but for many reasons, this form of occupational training persisted and spread in this country to a far greater extent than elsewhere. For one thing, small workshops, which have always been the backbone of apprentice training, continued to flourish in great numbers beside the growing industries. According to the census of 1933, of 1.9 million manufacturing enterprises, 1.7 million were small shops, employing one to five persons and accounting for 3.1 million workers out of a total of 9.2 million in manufacturing industries. With certain legal rights vested in their organizations, which can be traced back to the medieval craft guilds, the small shops maintained a leading position in training apprentices, and in that field enjoyed a semipublic status. Industry, too, because its production methods only slowly grew away from the old techniques and continued to require a great percentage of highly skilled workmen, undertook to train apprentices.

One of the most persuasive factors, however, in the maintenance of large-scale apprentice training was the prevailing brevity of schooling for the masses, and the concomitant early transfer of young people to employment. The following figures reveal how high a proportion of the thirteen to twenty-year-olds were employed in 1933.[1]

[1] Statistik des Deutschen Reichs, *Berufszählung* (Berlin, 1937), p. 60.

	MALE		FEMALE	
	Population (in thousands)	*Gainfully employed*	*Population (in thousands)*	*Gainfully employed*
13–14	641.0	10.5%	617.0	8.7%
14–16	654.3	62.8	630.4	46.3
16–18	723.7	84.6	703.4	70.8
18–20	1,177.9	92.4	1,166.8	78.6

How many of these young persons were employed under apprentice agreements is revealed in Table 4. Of the total number of apprentices, 676,997, or more than 75 per cent, were boys. This figure represents about two-thirds of all the gainfully occupied males between fourteen and eighteen and about half the total number of males in these age groups. Boys also accounted for 88 per cent of the 607,200 craft apprentices, but for only half the 273,000 commercial and clerical apprentices.

A study of the number of apprentices in relation to the size of establishment shows how much greater a role the smaller firms play in apprentice training than the larger. The average over-all ratio of 1 apprentice to 15.5 other employees may suggest that not enough apprentices were employed to replace the labor force, but it must be remembered that that number of employed included skilled as well as unskilled workers, and the managerial and clerical staffs. Indeed, if one compares the number of male apprentices with the number of male skilled workers employed in these industries, whose total was only 2.2 million, the average ratio was 1:4.1. In the small industrial shops employing from two to five persons the ratio was about two apprentices to every three skilled journeymen. It is true that small shops in Germany did use apprentices for cheap labor, but the 2:3 ratio gives a somewhat unfair picture of this situation. In the first place, the widespread unemployment in 1933 naturally affected apprentices less than journeymen, and in the second, these apprentices ultimately had to replace journeymen in both the small and larger establishments, and also the many self-employed, whose vast number may be guessed from the fact that, as mentioned above, there were 1.7 million industrial establishments employing only one to five persons.

TABLE 4. COMPARISON OF TOTAL EMPLOYEES AND APPRENTICES IN GERMAN INDUSTRY, 1933, BY SIZE OF FIRM [a]

Size of Enterprise (No. Employed)	*Total Employees*	*Total Apprentices*	*Craft Apprentices* Male	Female	*Commercial & Clerical Apprentices* Male	Female	*Ratio of Apprentices to Non-Apprentices*
	(in thousands)						
1	1,789.7						
2–3	2,720.7	216.2	150.2	23.4	17.9	24.7	1:11.6
4–5	1,273.7	180.7	119.8	19.3	20.1	21.6	1:6
6–10	1,146.1	151.5	89.2	13.8	25.9	22.5	1:6.6
11–20	912.7	85.5	42.3	5.6	21.5	16.0	1:9.7
21–50	1,186.3	76.8	38.3	3.5	20.2	14.9	1:14.4
51–100	1,059.7	49.5	24.6	3.0	12.3	9.7	1:20.1
101–200	1,045.1	38.0	20.0	1.8	8.7	7.5	1:26.5
201–1,000	2,217.5	58.1	33.1	1.3	11.7	11.9	1:37.2
Over 1,000	1,223.2	24.1	17.6	.5	3.5	2.5	1:49.7
TOTAL	14,574.6	880.5	535.1	72.2	141.9	131.3	1:15.5

[a] Statistik des Deutschen Reichs, vol. 462/3, *Gewerbliche Betriebszählung*, Part 3, 'Die gewerblichen Niederlassungen im Deutschen Reich,' pp. 24–5. This industrial census enumerates all establishments and the number of employed persons, according to occupations and positions within manufacturing industries (*Industrie und Handwerk*), commerce, and transportation. It excludes all unemployed (of whom there were as many as 4.5 million in these sections of the economy even in 1938), practically all agriculture, and all public and domestic services.

The traditional apprentice training given in small shops concentrated on manual skills. A training schedule for such shops did not exist, but masters and journeymen had long experience and a good general idea of what apprentice craftsmen in the field ought to learn. On the other hand, the machinery used in these shops was fairly limited, thus precluding any training in advanced production methods as such. The training each apprentice received depended largely, therefore, on the work his particular shop engaged in and on the master's willingness to teach his craft.

What uniformity of training existed was mainly the result of the requirements for passing the journeyman's examinations. These examinations were conducted by boards set up by the chambers of craftsmen (*Handwerkskammern*), representing both masters and journeymen. Failure to pass such an examination reflected not

only on the apprentice, but also on the master who trained him; masters with a number of failures against their records could, on occasion, be barred from further training of apprentices. The examination usually involved: (1) a designated piece of work (*Gesellenstück*) to be produced by the candidate entirely unaided; (2) performance of certain work in the presence of the examining board, and (3) testing of the candidate's theoretical knowledge of the technical aspects of the trade.

Apprentice training in industrial corporations was, on the whole, not so very different from that in small shops. But even before World War I, some of the outstanding industrial firms had developed programs of systematic apprentice training, which called for a year or more of training in special apprentice training shops before the apprentice was admitted to production in the general plant. In connection with such programs, detailed training schedules (*Berufsbilder*), outlining the main skills to be acquired for each occupation, were also developed. This kind of systematized training was strongly promoted by the German Committee for Technical Schools (Deutscher Ausschuss für Technisches Schulwesen, known as DATSCH), which was formed in 1908 by the leading associations of machine manufacturers and engineers.[2]

Nevertheless these programs were the exception rather than the rule and the special value of industrial apprenticeship resided in the opportunity for the apprentice to observe modern production methods, the preparation and development of tool and jigs, and even of special machinery, and to acquire thereby a technical knowledge far superior to that of the apprentices in small shops. This opportunity expanded when the plants developed their own vocational schools (*Berufsschulen*),[3] which were enabled by their

[2] Re DATSCH, *see* Adolf Heilandt, 'Apprenticeship Training and the German Executive of the Technical School System,' in *Year Book of Education* (London, 1939), and R. Harm, 'Berufsausbildung in der mechanischen Industrie an Hand der Lehrmittel des deutschen Ausschusses für technisches Schulwesen,' in *Reichsarbeitsblatt* (1925), *Sonderheft* 32.

[3] *See* Appendix II.

comparatively close contact with the factories to teach systematically the technical principles of the respective industries.

The examination of industrial apprentices was not so well developed as that of craft apprentices. Indeed, the majority of the industrial apprentices became journeymen without any special examinations. Wherever examinations were held, they had to be organized in collaboration with the *Handwerkskammern*, who, because they alone had the final word on master examinations, reserved the right to recognize or not recognize a journeyman's examination.

The length of training was legally limited to four years, which the apprentice usually served between the ages of fourteen and eighteen. The remuneration was accordingly low, being considered not a real wage but rather a payment to make it easier for parents to maintain the boy during his apprenticeship. For example, in 1930 the Zeiss optical firm paid wages that for the whole apprenticeship term averaged only one-fourth of a journeyman's wage and, even in the last year, amounted to not more than a third. And this was relatively high remuneration. Trade union influence on remuneration of apprentices, and indeed, on number and training, was small, and extended to only a few crafts.

National Socialism from its inception paid great attention to the registration, classification, channeling, and general control of labor, especially with regard to the occupational training of youth. In line with its preparation for war, it aimed at a substantial increase in the number of apprentices. As early as 1936, an official estimate put the number of craft apprentices alone at 780,000, which suggests a total for all apprentices of more than 1 million. In the single year of 1938, 330,000 boys, or almost two-thirds of all boys entering gainful employment in this year, started apprenticeships. The shift to war production is emphasized by the fact that of these 330,000, not less than 130,000 entered apprenticeships in the metal industries. By 1940, there were 1.1 million male, and 0.3 million female, apprentices, with 484,000 in the metal industries.

This expansion of apprentice training was facilitated by an expansion of the vocational guidance services, which had gained some prominence in the interwar period. In 1938 the national employment service made it compulsory for all school-leaving youth to register for vocational counseling, and for all employers to report the number of apprentices wanted. This centralization made it possible to distribute the available labor supply in accord with the needs of the economy. Counseling was based on an elaborate system of conferences, detailed registration cards, school reports, medical examinations, and, in some instances, aptitude tests. Acceptance of the vocational advice was not compulsory, but since no apprenticeship agreement could be entered into without the consent of the employment office, the net result was the same. On the basis of the employer's application for apprentices and the assurance from chambers of industry and commerce or of handicrafts that the employer was equipped to train the number of apprentices he requested, students were directed by the employment office to the individual plants for final selection and negotiation of the apprentice agreements.

For the leading industrial firms, this procedure represented a preliminary sifting of applicants. The firms then made their final choice by various methods, including psychological and work performance tests, examinations in general education and theoretical knowledge, and graphological analyses. The test given by the central psychotechnical office of the Reichseisenbahn was fairly representative of those generally employed for the selection of apprentices in the metal trades. This consisted of an examination in school knowledge, general thinking, technical thinking, space and form conception, manual dexterity, practical technical aptitude, and concentration. As the war progressed, the employment offices sent fewer and fewer applicants, thereby depriving the individual firms of a choice in the matter of apprentices.

The German Labor Front not only propagandized actively for the expansion of apprentice training and vocational guidance but sought to inject into its program the political ideology and military

views of the National Socialist party. Moreover, it attempted to mold the form and content of the technical training—a move that was strongly contested by industrial management, the *Handwerkskammern,* the chambers of industry and commerce, and by DATSCH. All these organizations predated National Socialism and considered occupational training their proper function. In this conflict between the German Labor Front, the representatives of handicrafts, and DATSCH, the last-named, because of its long experience and close cooperation with industry, gained more and more influence and eventually was entrusted with the task of reorganizing all apprentice training. It became the official advisory board to the Reich Minister of Economics and was known as the Reich Institute for Occupational Training in Commerce and Trades.

The ensuing reorganization of apprenticeship included the enumeration of all apprenticeable trades, with the result that thereafter training programs for only the enumerated occupations were recognized and entered in the apprentice rolls of either the chambers of industry or of handicrafts. When the number of such recognized apprenticeable trades had reached a total of 320, it was assumed to be complete. Another innovation was the introduction of semiapprenticeable trades (*Anlernberufe*) thought to be necessary and advantageous because of the increasing specialization and division of labor in industry. The list of such trades eventually enumerated not fewer than 260 occupations. For the apprenticeable trades the term of apprenticeship was generally reduced from 4 to 3 or 3½ years; for the semiapprenticeable occupations it was set at 1 to 2 years.

The enumeration of the trades was supplemented by a description of the skills that should constitute the various occupations. Whereas such occupational training specifications had formerly been merely guides for training directors, they now became binding rules and were incorporated in the various apprentice agreements. Their number was greatly increased with the aim of providing a complete occupational picture of each enumerated trade.

The specifications stated the field of work, the required skills, and the desirable skills. For example, the specifications for a 3½-year apprenticeship for toolmakers, as decreed by the Minister of Economics on 18 February 1939, described as the *field of work* of the toolmaker the following: cuts, punches, fixtures, molds, cutting and holding tools and gauges, equalizing and testing, conditioning and reconditioning of tools. The *required skills* to be learned by the apprentice during his term of training were: measuring, marking, center punching; filing, scraping, chiseling, sewing; fitting, grinding, polishing; drilling, reaming, sinking, thread-cutting; truing, bending, riveting; spring-winding; forging of simple parts and tools; soldering and brazing; simple work at lathe, planer, milling machine, and grinder; tempering and heat-treating of parts and tools; assembling of tools, fixtures, and gauges, and controlling and testing; and reconditioning of tools. *Desirable skills* were considered to be the following: simple welding and torch-cutting; making of divisions; undercutting; and work at file and saw machines, form and die planers and gauge-bore machines.

This brief enumeration is supplemented by a plan of training, which describes each skill in great detail, provides a training timetable, and contains references to training material, also published by DATSCH, that provides full drawings for practice work. The training curriculum for the various occupations is therefore rather complete and standardized. Only during the latter part of the training term does the apprentice do work that is dependent upon the type of production of the company that employs him.

In addition to the occupational specifications and the training plan, DATSCH stipulates the educational and physical requirements an applicant should meet in order to be admitted to a given trade, and also lays down the rules for the journeyman's examination, stating in broad terms what such an examination should comprise.

Semiapprenticeable trades are similarly described. This group of workers is expected to obtain intensive training, but of a narrower range. The training program for a machinist, for instance, may in-

clude extended training at the work bench and at the various machines, but a semiapprentice training program will concentrate on work at a planer, or milling machine, or grinder. Training agreements of the latter type, however, have not been very popular; fourteen-year-old boys usually prefer to prepare for a 'full trade' rather than become such specialized workers.

Most of these training and trade specifications would probably have remained dead letters, had it not been for the various institutions that help to vitalize and enforce them. Outstanding among these agencies are the apprentice shops, the systematically prepared journeymen's examinations, and the Reich occupational contest.

Apprentice shops and apprentice corners were, of course, in existence before 1933, but at that time there were only 50 or 60 such training centers. By 1941 their number was estimated at several thousand. An apprentice shop is a separate division of an industrial plant, set apart exclusively for the training of apprentices. It may range from a small room installation to a sizable industrial plant with all the required machinery. An apprentice corner, on the other hand, usually consists of only a work bench and a few arrangements permitting the demonstration and practice of some of the basic skills in a given trade.

The training in these shops is systematic, and is given by teaching individual skills. Practice jobs, requiring the various skills, are designed and performed in a prescribed order. Of equal importance with the types of work done by the apprentice are the method and quality of performance. The apprentice works under the constant supervision of journeymen trainers, or, in the larger shops, under masters and engineers.

Systematic training in an apprentice shop usually lasts for one year, but sometimes for two, and occasionally for the entire term of apprenticeship. It varies somewhat from trade to trade, but mainly from plant to plant. During the first six or twelve months the apprentice may perform only practice work, but in the latter part of his apprenticeship he is usually required to participate increasingly in the production of the plant. Nevertheless none of the

great corporations consider their apprentice programs paying propositions, though they concede that they are a necessary measure for providing a trained labor force for the future.

The training outside the apprentice shop inevitably loses something of its systematic character. But here, too, great care is taken that the apprentice should have an opportunity to be employed in the various divisions of the plant, working always under the supervision of a journeyman to whom he is specially assigned. Moreover, he never completely loses touch with the apprentice shop, to which he has to report monthly for an examination task. Such tasks are carefully designed and, together with the material for basic training, provide an integrated curriculum for the whole term of apprenticeship.

Good apprentice-shop training also provides a certain amount of technical instruction pertaining to such matters as characteristics of materials, proper use of machine tools, and the interpretation of work specifications and blueprints. All further technical education is entrusted to trade schools, which the apprentice is obliged to attend for six to ten hours a week.[4]

The apprentice completes his period of training with a journeyman's examination, which is virtually compulsory. These examinations are now independently organized by the various local chambers of industry and of the craft trades, and conducted in cooperation with the local trade schools. Only in Berlin will unified examinations be reintroduced.

The examination consists of two parts: one on acquired skills, and the other on related trade knowledge and, to some extent, civics. The examination of skills has always been the core of the journeyman's examination. Formerly the apprentice chose his piece of examination work himself, and produced it in his training shop, but since 1938, a uniform examination task, designated in each district by the respective trade chambers for production by all apprentices of a given trade, has become common practice. Toward the end of the National Socialist regime, attempts were made

[4] *See* Appendix II.

to have unified examination pieces, not only for a given city or state, but for the whole Reich. The evaluation of the examination work on a prescribed point system is also established in advance. This method of grading is reported to be uncommonly objective and leads to practically identical evaluations of the same work piece by various members of the examining boards.

The second part of the journeyman's examinations, dealing mainly with related trade knowledge, is also carefully prepared. The written examination refers to technical questions of the trade, to trade arithmetic (*Fachrechnen*), and to technical drawings. All apprentices of a given trade have to solve the same problems, and the individual examination boards are provided with answers regarded as acceptable. Only the oral examinations vary, and depend on examiner as well as apprentice.

The final grading of the apprentice takes into consideration not only the examination but also the records of his work kept by the apprentice during his whole term of apprenticeship. Grades received in the monthly training shop examinations are not given direct consideration, but they are, of course, reflected in the report the apprentice receives from his employer. The chambers of industry and of handicrafts have the right to grant the journeyman's certificate (*Gesellenbrief*).

One final unifying factor in German apprenticeship training remains to be mentioned—the Reich vocational contests inaugurated by the German Labor Front in 1934, which boasted 3 million participants by 1938. Since the tasks set for the contesting apprentices were increasingly developed by the very persons who directed the leading apprentice shops and who had written the trade specifications and developed the training materials, they inevitably corresponded closely to the prevailing content and methods sponsored by the larger industrial firms. Smaller shops, in their effort to compete with apprentices from these firms, naturally copied their training programs as closely as possible, with the result that apprentice training throughout the Reich became increasingly uniform.

The defeat of Germany in World War II brought apprentice training virtually to a standstill. Many industrial training shops were destroyed and industrial production is at a low ebb. Nevertheless, great effort is being expended in all parts of the country toward the restoration of occupational training along established lines. Employment offices have resumed occupational guidance and placement of apprentices; former training specifications are being further developed, and the chambers of handicrafts and of industry are again conducting journeyman's examinations. It is unlikely that any substantial changes will be introduced into the system.

Great Britain

The status of apprenticeship in Britain is largely governed, as in most European countries, by the extremely early age at which the majority of the children terminate their schooling. In 1931, 54 per cent of the fourteen to fifteen-year-old boys, 75 per cent of the fifteen to sixteen-year-olds, and 88 per cent of the sixteen to seventeen group had already entered employment. The corresponding figures for girls were lower, but the majority of those employed had also started to work at fourteen.[5]

A study of the occupational classification of gainfully employed youth in 1931 [6] reveals that among the 450,000 boys, fourteen and fifteen years of age, the four largest groups were messengers and van boys (120,500), agricultural workers (46,000), distributors in commerce or delivery boys (45,550), and general and unskilled labor (44,000). Together these accounted for about 60 per cent of the total. In contrast, hardly more than 20 per cent had entered manufacturing or construction industries, and only 7 per cent were in mining.

The four largest occupational groups among the 356,000 girls of fourteen and fifteen were domestic service (82,000), textile

[5] *Census of England and Wales for 1931* (London, 1933).
[6] John Gollan, *Youth in British Industry* (London, 1937), pp. 309–10.

trades (73,000), distributors in commerce (40,000), and general and unskilled workers (32,100), amounting to 64 per cent of the total.

Shifting to the sixteen and seventeen-year-old boys, we find a very different picture. There were 54 per cent more employed than in the lower age groups, but 50 per cent less in jobs as messengers or van boys. The increase in the number of boys employed in manufacturing industries was proportionally higher than the general increase, with the metal and machine trades claiming the largest group. Of the whole age group, 36 per cent were employed in manufacturing, construction, or mining. Among the 600,000 girls of sixteen and seventeen years of age, domestic service, trades, and distribution in commerce were still among the four leading groups; third place was held by clerks and typists.

The implication of this more distinct vocational stratification among the older boys is that many of them took dead-end or other temporary jobs at fourteen and fifteen, and found their way into skilled work only after a year or two. The reluctance of employers to hire the youngest boys for anything but menial work, and the understandable lack of decision on the part of youngsters with regard to their future vocations may have contributed equally to this situation. In any case, the premature curtailment of school education and the lack of any systematic transfer of youth into employment were obviously disadvantageous both educationally and vocationally.

The British *Census of Occupations* gives no usable information on the number of apprentices since it includes them with the labor force as a whole in each of the separate trades. Our most recent source of information, therefore, is the extensive inquiry into the subject made by the Ministry of Labour 1925–26,[7] which discloses to what extent apprenticeship and learnership were instrumental in leading youth into skilled occupations. Since then, it is true,

[7] British Ministry of Labour, *Report of an Enquiry into Apprenticeship and Training for the Skilled Occupations in Great Britain and Northern Ireland*, 1925–26, Parts 1–6 (London, 1928).

total apprentice figures may have declined, but the whole process of absorption of youth into industry has not been basically affected.

The Ministry Report is divided into seven parts, each covering one important industry. The part dealing with the entire machine and metal industry stated that the number of apprentices was not so great in 1925–26 as formerly, and that, as a consequence of the progressing division of labor and the increasing use of machinery, many of the old skills based on hand operations had disappeared. The Report stated further that new methods of production had 'undoubtedly introduced what might almost be described as a new class of operatives into industry,' but it nevertheless maintained that 'for the more skilled occupations which are still the mainstay of the industry, apprenticeship remains the normal method of recruitment.' [8]

Total employment of males in the machine and metal industry was estimated at 1.6 million, the number of apprentices at 72,000, and that of learners at 25,000.[9] This estimate was based on a sample inquiry in reply to which 1,573 firms reported 43,923 apprentices and 58,647 trainees (apprentices and learners combined); total employment in the firms reporting apprentices was about 500,000 male workers (Table 5).

The over-all ratio of other workers to apprentices was 11.4:1, and to trainees, 8.5:1. If this had been the journeyman-apprentice ratio, the number of trainees would not have been high enough to replace the skilled labor force. Since, however, it included all unskilled and semiskilled workers, the clerical staff, and others, this ratio may well have served to maintain apprenticeship as the usual form of recruitment of skilled workers.

The table shows, moreover, that the small firms trained a proportionately larger group of apprentices and learners than did the big corporations. There was an almost consistent mathematical relationship between the size of the firm and the number of em-

[8] Ibid. Part 6, p. 4.

[9] Learners are obviously not strictly definable; most of them work under contract for several years and their training is similar to that of apprentices, though it may be less systematic.

TABLE 5. TOTAL EMPLOYEES, TRAINEES, AND APPRENTICES IN VARIOUS MACHINE AND METAL INDUSTRIES, GREAT BRITAIN AND WALES, 1925–26, BY SIZE OF FIRM [a]

Size of Firm (No. Employed) [b]	*No. of Firms*	*Total Male Employees*	*Total Trainees* [c]	*Total Apprentices*	*Employees per Trainee*	*Employees per Apprentice*
1–4	38	109	56	47	1.9	2.3
5–10	56	378	126	111	3 0	3 4
11–20	129	1,854	455	384	4.1	4.8
21–50	260	8,565	1,672	1,307	5.1	6.6
51–100	245	17,445	3,184	2,509	5.5	6.9
101–200	313	44,529	6,551	5,268	6.8	8.4
201–500	286	89,489	12,364	9,518	7.2	9.4
501–1,000	136	93,250	10,036	7,482	9.3	12.5
1,001–3,000	90	141,519	15,513	11,820	9.1	11 9
Over 3,000	20	103,389	8,690	5,477	11 9	18.9

[a] British Ministry of Labour, *Report of an Enquiry into Apprenticeship and Training for the Skilled Occupations in Great Britain and Northern Ireland*, 1925–26, Part 6 (London, 1928), p 4 Table includes engineering, shipbuilding, and ship repairing industries.

[b] Includes all trainees and all salaried workers and clerks, as well as manual workers.

[c] Includes all apprentices and other types of learners.

ployees and trainees—the larger the firm, the smaller the proportion of apprentices.

Apprenticeship terms in the machine and metal industries were quite extended, as may be seen in the following figures on the percentage of apprentices with various periods of training. Hardly

Years	*Per cent*
4	1.6
5	47.7
5–7	17.9
6	6.7
7	26.1

any apprentices served less than five years, and more than a quarter were under seven-year agreements. The age at which apprenticeship starts is indicated by the following figures.

14 years	28.4%	15 or 16 years	4.5%
14 or 15 years	6.0	16 years	34.7
14 to 16 years	16.0	16 to 18 years	.9
15 years	8.7	18 and over	.3

Approximately 99 per cent of all apprentices begin their terms between the ages of fourteen and seventeen. In view of the common school-leaving age, it might be assumed that fourteen and fifteen would be the most usual years for entering apprenticeship. Actually, however, sixteen is the age at which most apprenticeships start. These figures support the implication of the over-all survey of absorption into employment—that a part of school-leaving youth either remains idle or engages in dead-end jobs for one or two years before starting systematic training.

In the building industry, including public works and construction, the picture is, on the whole, similar to that of the metal industry.[10] Total male employment in 1925–26 was estimated at 920,000, including 107,000 workers under twenty-one years of age. Of the latter, 76 per cent were either apprentices or learners, or so-called 'improvers' (a term also used to describe a young worker in his first year as a journeyman, but not yet receiving full compensation for his work). The number of apprentices and learners was therefore about 81,000. As in the metal industry, small shops employed a proportionately larger number of apprentices or trainees than the larger firms (Table 6). For the building industry, as a whole, the Ministry of Labour estimated that the journeyman-apprentice ratio was 4.4:1 and for a single trade, such as that of plumbers, even 2.2:1. These figures leave the impression that in the building industry systematic training was so widely expanded that it could more than supply the necessary replacements in the skilled labor force, and that in many cases apprenticeship was being used as a source of cheap juvenile labor.

In general, the length of training in the building industry was from five to seven years as in the metal trades. Among the reported apprentices, 42 per cent were serving a five-year term, 21 per cent six years, and 19 per cent seven years; the rest were not strictly classified. For cabinetmakers seven years was the most frequent term; for plumbers and painters, six. The age of entrance in these trades was rather equally distributed among fourteen, fifteen, and sixteen.

[10] British Ministry of Labour, op. cit. Part 2.

TABLE 6. RATIO OF TOTAL EMPLOYEES AND OF JOURNEYMEN TO TRAINEES AND APPRENTICES IN THE BUILDING TRADES, GREAT BRITAIN, 1925-26, BY SIZE OF FIRM [a]

Size of Firm (No. Employed)	Employees per Trainee	Employees per Apprentice	Journeymen per Trainee	Journeymen per Apprentice
1-4	2.0	2.4	.9	1.1
5-10	3.2	3.8	1.7	2.0
11-20	4.2	5.0	1.9	2.3
21-30	5.1	6.3	2.1	2.6
31-40	5.8	6.9	2.5	2.9
41-50	6.2	7.2	2.6	3.0
51-100	8.1	10.0	3.2	4.0
101-200	10.1	12.4	3.7	4.5
201-500	13.2	15.5	4.5	5.3
501-1,000	12.6	19.4	5.0	7.6
1,001-5,000	19.6	27.5	6.1	8.4

[a] British Ministry of Labour, *Report of an Enquiry into Apprenticeship and Training for the Skilled Occupations in Great Britain and Northern Ireland*, 1925-26, Part 2 (London, 1928).

The printing industry [11] offers another example of the customary method of recruitment through a well-developed system of apprenticeship and learnership. The entire industry employed 169,000 male, and 98,000 female, workers, but the Ministry's report was based on an investigation of firms employing 115,000 male workers or about two-thirds of all males employed in the industry. These firms reported 11,594 apprentices and learners, which suggests a total of about 18,000 male apprentices and learners in all printing trades.[12] In the reporting firms the worker-apprentice ratio was 9:1 and the worker-trainee (including learners) ratio, 8:1. The journeyman-apprentice ratio was 5.5:1, which would be too high for replacement requirements if four years were the prevailing apprentice term as it is in the United States, but which may not be excessive where seven years is the usual term. The percentage distribution according to the length of training may be seen in the

[11] British Ministry of Labour, op. cit. Part 1, p. 6.

[12] Female apprentices are rare in all trades.

following figures. Two-thirds of the apprentices enter the printing industry at fourteen years of age, rather than at fifteen or sixteen, which is common for the industries discussed.

Years	*Per cent*
4	2.0
5	15.2
5–7	5.6
6	6.8
7	70.4

In general, apprenticeship in Great Britain has ceased to be as strictly regulated an institution as it was in the past. Thus, the proportion of written apprentice agreements in England was relatively low. The highest rating was to be found in the printing industry, which made the best showing with 54 per cent of the agreements in writing; 12 per cent concerned learnerships, and 34 per cent of the apprenticeships were based on verbal agreements. In the building trades only 28 per cent of all trainees worked under written agreements, and 52 per cent under verbal agreements; the remaining 20 per cent were 'improvers.' The situation was about the same in the metal and machine industry.

The apprentices usually learned their trades by working either under or with journeymen, progressively acquiring skills while doing work of different kinds and at different machines. Occasionally they were under the direct supervision of foremen, but the employment of a special apprentice master was rare. Learning by working was therefore the chief feature; systematic and theoretical instruction played hardly any part in the apprentice program.

Technical instruction was apparently only slightly developed. Indeed, there was no general rule making technical instruction compulsory for all apprentices. The survey of the metal industry showed that compulsory evening classes were reported by only 62 firms, compulsory daytime classes by 19, and optional daytime classes by 78. Attendance at technical classes was nevertheless encouraged by most of the firms. Of those reporting, however, 111

firms stated that no opportunities were available for such studies, and 123 failed to answer the question, which may indicate a lack of interest in, or familiarity with, the subject.

Entering apprenticeship, as they do at fourteen to sixteen, apprentices do not obtain much compensation for their work. There are even instances in which apprentices pay a premium to the employer for being admitted to training.

In general, the scale of apprentice wages is indicated in the following standards developed by the Regional Joint Committee of the Building Industry,[13] which show what proportion of a journeyman's wage each age group of apprentices should receive.

Below 16	1/8
16 to 17	1/6
17 to 18	1/5
18 to 19	1/4
19 to 20	1/3
20 to 21	1/2

The future of apprenticeship in Great Britain is a controversial issue. There are those who, even before the war, said that apprenticeship was outmoded.[14] During the war it was felt that the 'force of change has been so overwhelming that a return to the former apprenticeship system would seem to have become impossible.'[15] Neither industry nor labor, however, expects any radical transformation in the system of absorbing youth into industry through apprentice training; reforms rather than an abandonment of the existing system of training are anticipated. A conference held under the auspices of Nuffield College in September 1942, in which representatives of management, labor, and education participated, categorically refused to accept the view that 'apprenticeship is obsolete, or in process of becoming so. On the contrary,' the report continued, 'we believe that in many industries the need for highly trained craftsmen is increasing, and certain to increase,

[13] British Ministry of Labour, op. cit. Part 2, p. 37.

[14] Gollan, op. cit. p. 231.

[15] C. A Oakley, 'The Last Days of the Apprenticeship System?' in *Journal of the Industrial Welfare Society* (January–February 1943), p. 8.

and that even where the proportion of skilled workers in the total labour force is declining, the degree of skill required of the craftsmen is becoming definitely higher and more exacting; and we strongly urge in all appropriate industries the establishment of agreed National Apprenticeship Schemes under which the industry as a whole will accept responsibility for the training and welfare of apprentices, and for the necessary release to enable them to maintain their day-time studies.' [16] The conference also stressed that everything possible should be done to raise the quality of entrants to apprenticeship in the skilled crafts and that the bias of the educational system against manual occupations should be removed lest the development of industry be seriously prejudiced.[17]

In conclusion, the educational system and apprenticeship in Great Britain, both so deeply rooted in tradition, seem to supplement each other to such an extent that any great changes in the whole setup are hardly likely in the near future.

SWITZERLAND

With the great majority of children leaving school at the early age of fourteen, in Switzerland as in other European countries apprenticeship is the main source of skilled labor.

Prior to the French Revolution, the usual apprenticeship required the extremely long term of seven years; it then had to be followed by at least seven years of journeymanship before master status could be attained. Indeed, in the period of its decline, the corporate system virtually excluded all but a small group of the well-to-do from acquiring mastership. Thus, when this system was swept away at the end of the eighteenth century, vocational training was at an ebb. The matter, if considered at all, was held to be a private responsibility. For many years, the educator Fellenberg warned in vain that it was the duty of the state to make it possible for everyone, in his own interest and that of society, to recognize

[16] Nuffield College, Oxford, *Industry and Education* (Oxford and London, 1943), p. 12.
[17] Ibid. pp. 33–4.

and choose the vocation that offered the best prospect of success.

Individual craftsmen and industrialists with vision carried the burden of vocational training until an association of trade and industry representatives, created in 1879, took up the battle for improved apprenticeship, examination of apprentices, and compulsory attendance of continuation schools. The Swiss Commercial Association promoted comparable organization of the training of commercial employees. Shortly thereafter the cantons initiated legislation on apprenticeship, and finally, utilizing all the experience of the pioneers in the field, the federal government stepped in.

As early as 1884, the Federal Council decided to grant subsidies to institutions of vocational education for crafts and industry. In 1891, a similar step was taken to aid training for commercial pursuits, and four years later subsidies were granted for home economics and other vocational training for girls. With the creation of the office of a federal inspector for vocational education and training (1924), the Council took a step beyond the policy of simple subsidies. The inspector was assigned the task of reorganizing vocational training on a national scale, and the result of his work was the federal law on vocational training adopted by Parliament on 26 June 1930, and in force since 1 January 1933. Subsequently, the cantons adjusted their legislation to conform with federal law.[18]

The federal law carefully maintains decentralization, except where uniformity is required in the interest of the national economy and of more efficient training. Apprenticeship is under the general authority of the Federal Department of Economics, while direct supervision is exercised by cantonal governments. The Federal Departments of Economics and Labor, employer associations, and trade unions cooperate in laying down the rules of apprentice training in each trade with regard to terms of apprenticeship, training programs, examinations, and continuation school attendance. By 1938, 60 such apprentice regulations (*Lehrlings-*

[18] Emil Zucker, 'Berufsbildung und Berufsberatung in Handwerk, Landwirtschaft, Industrie und Handel,' in Walter Guyer, *Erziehungsgedanke und Bildungswesen in der Schweiz* (Frauenfeld and Leipzig, 1936), pp. 186–98.

reglemente) had been issued for 83 trades.[10] All of them stipulate written apprenticeship contracts. The examinations of apprentices, in which representatives of management and labor cooperate, are recognized for the whole of Switzerland. This is also true of the 'higher examinations' required of journeymen who wish to become masters. Journeymen must work for three years at that level before they are permitted to take the master's examination. The title of master is legally protected, and in certain trades designated by the Federal Council only masters are authorized to keep and train apprentices.

All regulations make theoretical instruction at continuation school a condition of apprenticeship. These schools are subsidized by the federal government; in 1938, 262 industrial, and 97 commercial, continuation schools received such grants. Regional and local apprentice training problems are dealt with by cantonal apprentice offices whose representatives hold frequent discussions among themselves in order to adjust the work in the cantons to the federal standards.

Although the enactment of federal law raised the standards of apprentice training appreciably, it contributed at the same time to a decrease in the number of apprentices. The new rules presupposed a certain knowledge of pedagogy which not all masters possessed. Thus many who had formerly trained apprentices withdrew from the field. Apprenticeship openings, especially in rural areas, declined with the suppression of small local vocational schools and the resulting necessity of sending the apprentices to more distant schools for theoretical instruction. The increase in apprenticeship fees, which was considered justified because of the improved training offered, made parents reluctant to enroll their children, particularly when the widespread unemployment that set in soon after the enactment of the federal laws aroused doubts whether even good training would offer better employment opportunities than no training at all. Since abnormal conditions prevailed during

[10] *Handbuch der Schweizerischen Volkswirtschaft*, vol. 1, s.v. 'Berufsbildung,' pp. 228–31.

the war years, it cannot yet be ascertained whether these unwelcome by-products of the federal law will be effectively eliminated.

The following figures show the number of apprentices in Switzerland in 1939.[20] The total number of trade apprentices represents a considerable decline: even in 1910 there were 46,000; in 1920

	Male	*Female*	*Total*
Trade apprentices	36,024	7,468	43,492
Commercial apprentices	8,022	5,450	13,472
TOTAL	44,046	12,918	56,964

there were 59,000, and in 1930, 61,000. Nevertheless, the 1939 figure was still remarkably high. The total of the gainfully occupied in industry, crafts, and construction was 781,581. Deducting about one-fourth for those who would profit more by preparation as commercial apprentices, there would remain about 600,000 positions for which trade apprenticeship could be considered adequate training. The 43,500 trade apprentices constitute 7.3 per cent of the entire technical and manual labor force in industry, crafts, and construction; this ratio of 1:14 would be too small for the replacements of skilled workers but is adequate in relation to the total labor force in these fields, which contains unskilled as well as skilled workers.

The term of apprenticeship averages three years for male, and two years for female, apprentices.[21] In 1939, 18,308 apprentice examinations were given, and 19,494 new contracts were drawn; in 1940, examinations totaled 18,531, and new contracts, 19,320.[22] Annually, from 18,000 to 19,000 apprentices, or about 95 per cent of all who enter apprenticeship, pass their examinations. Among these, there are about 14,000 trade apprentices who represent approximately 22 per cent of an average age group. Since 44.6 per cent of the gainfully occupied population worked in industry and

[20] *Statistisches Jahrbuch der Schweiz*, 1940, p. 144.
[21] Willi Luick, *Der berufliche Nachwuchs in der Schweiz* (Berne, 1929), p. 54.
[22] *Statistisches Jahrbuch*, 1940, pp. 382–3.

crafts,[28] trade apprentices are available for 50 per cent of all jobs in industry and crafts, and for much more than half of all those jobs for which trade apprenticeship provides adequate training. On the basis of the same computation made for the male employed alone, it is found that about 54 per cent of a male age group is occupied in industry and crafts, and that about 33 per cent of a male age group goes through trade apprenticeship; thus, for more than 60 per cent of all jobs in industry and crafts, there are trained trade apprentices. Considering the total number of the male trade and commercial apprentices, it may be presumed that annually about 15,000 complete their terms. This figure represents 46 per cent of a whole male age group and much more than half of all those gainfully occupied in the age groups fifteen to seventeen, which are the normal apprenticeship years. Thus, everything indicates a substantial systematic preparation for work through apprentice training.

There is no doubt that not all apprentices will do skilled work; many will work in semiskilled or unskilled jobs, at least during a part of their working lives. Although skilled work is a characteristic feature of the Swiss economy and an indispensable element for its successful operation, the trend toward mass production has made itself felt even here, and the proportion of skilled workers among the total has declined. The ranks of the metal workers showed rapid percentage increases of semiskilled and unskilled workers at the expense of skilled workers. According to reports of the Swiss Metal Workers Union, more than 50 per cent of its members are semiskilled or unskilled. The recent decline in the number of apprentices may therefore be not merely a temporary effect of the 1930 law but rather a permanent adjustment to changed conditions in the national economy.

The shifts among fields of activity and interest are suggested by the following figures on apprentice examinations given and new

[28] Figure for 1930, ibid. pp. 42, 46; only slight changes have occurred since.

contracts drawn in various trades, in 1939 and 1940.[24] In normal times, the trends of which are expressed in the number of examinations given in 1939, trade apprenticeship was highest in the field of clothing, cleaning, and dressmaking (with a majority of girl apprentices), and next highest in the machinists, metal, and electrical workers' group. High figures were also attained in construction,

	Examinations		*New contracts*	
	1939	*1940*	*1939*	*1940*
Machine, metal, & elec. work	3,618	3,874	4,771	5,035
Construction	1,321	1,214	1,076	792
Woodworking	980	930	906	810
Clothing, cleaning, dressmaking	4,457	3,903	3,712	3,542
Food, luxuries	1,551	1,482	1,575	1,754
Commerce	3,959	4,746	4,947	5,097
TOTAL	18,308	18,531	19,494	19,320

food and luxuries, and woodworking; the number of apprentices in any of the other trades did not exceed a few hundred. The figures on new contracts for 1939 and 1940 show the effects of the outbreak of the European war: an increase of apprenticeship in the metal trades, which rose to first place, and a decline in clothing and dressmaking, and especially in construction, the prospects for which were dark when manpower was being absorbed by military mobilization.

Interesting features of apprenticeship in Switzerland, which must be at least mentioned here, are the vocational guidance and welfare work set up for apprentices. At the end of World War I, several private organizations founded the Association for Vocational Guidance and Welfare Work for Apprentices (*Verband für Berufsberatung und Lehrlingsfürsorge*) in which all offices of vocational guidance cooperate with the great economic and vocational organizations, federal and cantonal departments, and welfare organizations. An intelligent distribution of the young people among the various vocations is thereby effected, and youth is af-

[24] *Statistisches Jahrbuch,* 1940, pp. 382-3.

forded a certain amount of protection, which is the more necessary since apprentices in Switzerland are not generally members of trade unions.[25]

There are 250 offices for vocational guidance spread over the country, which function as either cantonal or town units. Each is under the direction of one male and one female guidance counselor. Most of these counselors are teachers by profession, and on the strength of this background, they are equipped to obtain a good picture of the personality, inclinations, and aptitudes of the youngsters, and to give each one sound advice. Through circulars, courses, and other means, they are familiarized with the employment prospects in various trades and vocations, and they use this knowledge to modify their recommendations. The Association itself tries to influence public opinion by analyzing, through lectures, the press, and other media, the futures open to boys and girls in the various vocations.

The apprentice contracts contain clauses designed to avert any threat to the health and mental development of the apprentice. The Association goes further by recognizing that many youths who might usefully serve an apprenticeship are prevented from doing so by the immediate need to earn money. Thus, several organizations offer apprenticeship grants for children who could not otherwise afford to serve their term.

U.S.S.R.

Inasmuch as most of the available data on apprenticeship in the Soviet Union pertains to the institutions established for the schooling of the young workers rather than their actual in-employment training, the subject has been treated in Appendix II. There are, however, some figures on the number of apprentices which indicate the scope of the system prior to its abolition, as such, in October 1940.

[25] According to a report at the meeting of the Swiss trade unions in 1933, only 2,000 of the 230,000 members were in the usual apprentice age groups. *See* Schweizerischer Gewerkschaftsbund, *Protokoll des Gewerkschafts-Kongresses* (Zurich, 1933), p. 102.

When the first Five-Year Plan started in 1929, the number of apprentices was 133,200. The peak was reached in 1932 with 567,-900, but after the reorganization of the factory apprentice schools in 1933, the number dwindled to 269,200 in 1936 and 242,000 in 1938.[20] The number of apprentices produced by these schools *annually* remained about as high as it was before the restriction of training, but the quality of their training was, of course, considerably lower.

The proportion of apprentices to the number of workers in large-scale industries was 12.1 per cent in 1932 and 4.6 per cent in 1936. The highest percentage of apprentices was in printing and publishing with 17.8 per cent in 1932 and 11.8 per cent in 1936. In the machine, building, and metal working industries the percentage declined from 19.2 to 6.5 per cent; though the number of apprentices decreased only from 239,500 to 116,000, apprenticeship obviously did not keep pace with the expansion of the industries. The percentage of apprentices was lowest in the production of linen (1.7), food industry (2.3), coal mining (2.3), rubber industry (2.5), and fuel extraction (2.6).

Further analyses and comparisons are not possible, since the Statistical Abstract of the Soviet Union attempts no breakdown of the labor force according to skilled workers, operatives, and laborers. Moreover, on the basis of the brevity of training, if for no other reason, the term 'apprentice' can scarcely have the same connotations and significance that it does in other countries.

[20] *Socialist Construction in the USSR*, Statistical Abstract ed. by the State Planning Commission of the USSR, English translation (Moscow, 1936), pp. 378–9; *Socialist Construction* . . . , in Russian (Moscow and Leningrad, 1939), p. 116.

APPENDIX A

Distribution of the Labor Force, 1940, by Occupation[a]

Class 1: Professional (excl. Technical)	*Male* Employed	*Male* Unemployed	*Female* Employed	*Female* Unemployed
Actors & actresses	6,931	3,988	4,761	2,525
Artists & art teachers	34,478	4,364	17,507	2,231
Authors, editors, & reporters	51,523	3,809	18,536	1,135
Clergymen	133,449	1,641	3,148	——
College presidents, professors, etc.	55,123	407	19,884	203
Dentists	69,074	296	1,047	178[b]
Lawyers & judges	173,456	1,805	4,187	106
Musicians & music teachers	69,800	15,286	59,456	4,267
Osteopaths	4,905	14	1,102	[c]
Pharmacists	76,131	2,577	3,216	[c]
Physicians & surgeons	157,041	607	7,608	107
Social & welfare workers	24,868	1,101	44,809	1,750
Teachers (n.e.c.)	247,716	6,763	772,044	15,935
Veterinarians	10,638	92	79	[c]
Other professional workers	68,803	2,845	57,556	1,422[c]
TOTAL	1,183,936	45,595	1,014,940	29,859

[a] Compiled from Sixteenth Census of the United States, 1940, Population, vol. 3, *The Labor Force*, Part I, U.S. Summary (Washington, 1943), Tables 58 and 59. Figures do not include persons employed on public emergency work.

[b] Includes pharmacists, osteopaths, and veterinarians.

[c] *See* Dentists.

Distribution of Labor Force, 1940 (*cont.*)

Class 2: Technical Professional	*Male*		*Female*	
	Employed	Unemployed	Employed	Unemployed
Architects	19,899	965	447	—
Chemists, assayers, & metallurgists	55,371	2,308	1,654	—
Civil engineers	80,171	4,245	191	—
Electrical engineers	53,103	1,628	164	—
Mechanical engineers	82,255	2,691	188	—
Other technical engineers	29,029	1,400	187	—
Total	319,828	13,237	2,831	—

Class 3: Semiprofessional	*Male*		*Female*	
	Employed	Unemployed	Employed	Unemployed
County agents & farm demonstrators	5,845	4,577	4,396	—
Trained nurses & student nurses	7,509	563	348,277	12,938
Dancers, showmen, & athletes	31,147	—	13,927	—
Chiropractors	8,758	—	1,871	—
Funeral directors & embalmers	35,856	—	2,114	—
Healers & medical service workers	10,045	—	9,510	—
Optometrists	9,762	—	475	—
Religious workers	8,798	—	25,874	—
Semiprofessional workers	61,584	—	9,147	—
Postmasters, misc. govt. officials	198,377	3,531	33,896	—
Buyers & dept. heads, stores	51,935	—	17,581	—
Managers & superintendents, bldg.	40,394	—	28,488	—
Officials, lodge, soc., union, etc.	21,079	—	4,225	—

DISTRIBUTION OF LABOR FORCE, 1940 (*cont.*)

Class 3: Semiprofessional	*Male* Employed	*Male* Unemployed	*Female* Employed	*Female* Unemployed
Finance, insurance, & real estate	174,668	3,011	12,300	525
Personal services	91,572	2,219	31,655	—
Misc. industries & services	108,970	4,942	19,116	678
TOTAL	866,299	18,843	562,852	14,141

Class 4: Proprietors, Managers, & Officials (*n.e.c.*)	*Male* Employed	*Male* Unemployed	*Female* Employed	*Female* Unemployed
Mining	30,447	831	394	—
Construction	113,898	6,247	1,098	—
Manufacturing	402,506	6,843	17,862	289
Transportation, communications, & utilities	134,232	1,674	5,902	—
TOTAL	681,083	15,595	25,256	289

Class 5: Commercial Trades	*Male* Employed	*Male* Unemployed	*Female* Employed	*Female* Unemployed
Conductors, railroad	46,185	675	—	—
Advertising agents	30,110	—	3,602	—
Country buyers, shippers of livestock, etc.	38,007	—	509	—
Credit men	26,307	—	3,643	—
Floormen & floor mgrs., store	4,672	—	2,201	—
Purchasing agents & buyers (n.e.c.)	28,966	—	2,593	—
Proprietors, mgrs., & officials				
Wholesale trade	227,334	5,015	6,992	d

[d] Included in Retail trade, except eating and drinking places.

DISTRIBUTION OF LABOR FORCE, 1940 (*cont.*)

Class 5:	*Male*		*Female*	
Commercial Trades	Employed	Unemployed	Employed	Unemployed
Eating & drinking places	200,519	6,297	65,064	1,134
Retail trade, exc. eating & drinking places	1,242,323	24,277	161,999	1,701
Baggagemen, express messengers, etc.	27,759	357	117	——
Bookkeepers, accountants, etc.	447,606	31,178	448,359	24,438
Office machine operators	8,284	551	51,454	3,375
Shipping & receiving clerks	200,669	18,318	8,668	——
Stenographers, typists, & secretaries	68,805	5,252	988,081	67,582
Telegraph operators	31,554	1,644	8,228	220
Agents (n.e.c.)	80,040	——	8,601	——
Attendants & assistants, library	1,955	——	7,028	——
Attendants, physicians' & dentists' offices	1,387	——	27,922	——
Other clerical & kindred workers (n.e.c.)	1,134,933	86,670	630,471	46,499
Canvassers & solicitors	72,995	5,119	17,099	1,288
Insurance agents & brokers	226,061	8,020	13,081	284
Real estate agents & brokers	100,856	4,541	10,254	394
Salesmen, finance, brokerage & commission firms	18,327	——	380	——
Traveling salesmen & sales agents	579,423	——	12,904	——

DISTRIBUTION OF LABOR FORCE, 1940 (*cont.*)

Class 5:	*Male*		*Female*	
Commercial Trades	Employed	Unemployed	Employed	Unemployed
Other salesmen & saleswomen	1,021,329	105,186	724,223	74,931
Wholesale & retail trade services	28,422	—	2,509	—
Wholesale & retail trade inspectors	3,162	—	1,658	—
TOTAL	5,896,990	303,100	207,640	221,846

Class 6:	*Male*		*Female*	
Technical Trades	Employed	Unemployed	Employed	Unemployed
Designers & draftsmen	91,820	5,085	9,105	1,276
Surveyors	13,243	1,486	101	—
Aviators	5,828	—	51	—
Photographers	29,078	—	4,623	—
Radio & wireless operators	10,296	—	97	—
Technicians & assistants, lab.	41,487	—	21,511	—
Technicians, exc. lab.	6,567	—	781	—
Officers, pilots, pursers, & engineers, ship	30,978	—	97	—
Props., business & repair services	82,288	1,226	4,303	—
Foremen				
Construction	45,394	8,337	129	—
Manufacturing	262,851	5,816	27,126	1,829
Transportation, communication, & utilities	92,366	1,420	713	—
Mining	26,443	—	41	—
Business & repair services	5,892	—	212	—
Personal services	4,314	3,635	2,686	5,401

DISTRIBUTION OF LABOR FORCE, 1940 (*cont.*)

Class 6: Technical Trades	*Male*		*Female*	
	Employed	Unemployed	Employed	Unemployed
Government	9,411	—	398	—
Other industries & services	8,040	—	1,613	—
Industry, not reported	3,481	—	363	—
Inspectors				
Mining	6,954	—	19	—
Construction	4,336	—	114	—
Railroads (incl. repair shops)	28,261	—	75	—
Transportation (exc. railroads)	5,005	—	81	—
Communication & utilities	7,234	—	815	—
Misc. industries & services	11,173	—	1,707	—
Locomotive engineers	69,496	1,686	—	—
TOTAL	902,236	28,691	[illegible],761	8,506

Class 7: Craft Trades	*Male*		*Female*	
	Employed	Unemployed	Employed	Unemployed
Bakers	119,039	11,025	10,017	—
Blacksmiths, forgemen, & hammermen	72,034	6,983	212	—
Boilermakers	27,589	3,278	73	—
Cabinetmakers & patternmakers	81,263	6,719	607	—
Carpenters	556,918	133,608	1,395	—
Compositors	150.647	11,598	7,425	382
Electricians	196,526	20,549	696	—
Locomotive firemen	43,851	3,559	—	—
Machinists, millwrights, & toolmakers	604,706	33,793	5,067	—

DISTRIBUTION OF LABOR FORCE, 1940 (*cont.*)

Class 7: Craft Trades	*Male*		*Female*	
	Employed	Unemployed	Employed	Unemployed
Masons, tile setters, & stonecutters	102,089	32,923	347	—
Mechanics & repairmen, & loom fixers	859,491	75,482	4,240	—
Molders, metal	75,559	7,542	345	—
Painters (construct.), paperhangers, & glaziers	350,372	89,100	3,849	—
Plasterers & cement finishers	51,926	16,824	214	—
Plumbers & gas & steam fitters	173,385	24,748	530	—
Printing craftsmen, excl. compositors & typesetters	60,830	3,810	1,019	—
Rollers & roll hands, metal	26,439	3,130	108	—
Roofers & sheet metal workers	103,715	14,857	420	—
Shoemakers & repairers (not in factory)	59,609	3,665	586	—
Stationary engineers, cranemen, & hoistmen	285,352	23,070	774	—
Struct. & orn. metal workers	27,769	6,893	182	—
Tailors & furriers	105,022	11,274	16,470	—
Other craftsmen & kindred workers	192,766	14,690	11,755	5,401
Apprentices	81,807	7,295	2,273	—
Dressmakers & seamstresses (not in factory)	2,324	259	133,627	12,146

Distribution of Labor Force, 1940 (*cont.*)

Class 7: Craft Trades	*Male* Employed	*Male* Unemployed	*Female* Employed	*Female* Unemployed
Linemen & servicemen, telegraph, telephone, & power	103,501	4,340	995	—
Barbers, beauticians, & manicurists	209,439	8,524	206,592	10,965
Total	4,723,988	579,538	409,818	28,894

Class 8: Farmers and Farm Managers	*Male* Employed	*Male* Unemployed	*Female* Employed	*Female* Unemployed
Farmers (owners & tenants)	4,955,624	—	151,087	—
Farm managers	36,091	—	812	—
Total	4,991,715	—	151,899	—

Class 9: Operatives	*Male* Employed	*Male* Unemployed	*Female* Employed	*Female* Unemployed
Telephone operators	10,697	488	189,002	6,646
Chauffeurs, truck drivers, & deliverymen	1,499,972	174,107	8,449	—
Mine operators & laborers	649,226	112,603	1,787	—
Painters, exc. construction & maintenance	82,768	8,550	6,258	—
Power station operators	21,285	311	620	—
Welders & flame cutters	122,688	10,061	2,053	—

DISTRIBUTION OF LABOR FORCE, 1940 (*cont.*)

Class 9: Operatives	*Male*		*Female*	
	Employed	Unemployed	Employed	Unemployed
Other specified operators & kindred workers	390,056	37,028	34,495	7,156
Operators & kindred workers (n.e.c.) by industry				
Manufacturing	2,303,054	229,578	1,596,579	154,331
Nonmanufacturing	366,175	45,120	86,509	11,022
TOTAL	5,445,921	617,846	1,925,752	179,155

Class 10: Laborers and kindred workers	*Male*		*Female*	
	Employed	Unemployed	Employed	Unemployed
Mail carriers	119,246	1,456	1,524	—
Messengers, exc. express	65,544	8,170	2,732	—
Collectors, bill & account	38,374	—	3,316	—
Hucksters & peddlers	48,357	—	2,338	—
Newsboys	53,313	—	1,057	1,288
Attendants, filling station, etc.	209,449	20,618	3,866	—
Brakemen & switchmen, railroad	107,432	6,304	—	—
Conductors, bus & street ry.	16,751	538	154	—
Firemen, exc. locomotive & fire dept.	112,612	9,889	383	—

DISTRIBUTION OF LABOR FORCE, 1940 (*cont.*)

Class 10: Laborers and kindred workers	*Male*		*Female*	
	Employed	Unemployed	Employed	Unemployed
Laundry operatives & laundresses (exc. private family)	48,296	4,457	167,967	10,362
Motormen, ry., mine, factory, etc.	53,281	1,907	227	—
Sailors, deck hands, exc. U.S. Navy	35,221	9,796	137	—
Domestic service workers	142,231	19,450	1,969,083	196,395
Protective service workers	677,213	24,557	4,321	214
Service workers, exc. domestic & protective	1,310,043	151,491	1,050,726	95,955
Farm laborers & foremen	2,770,005	300,566	320,005	20,730
Laborers, exc. farm & mine	2,965,693	828,557	98,435	17,578
TOTAL	8,773,061	1,387,756	3,626,271	342,522

APPENDIX B

Size of the Labor Force in Selected Technical and Manual Occupations, 1870–1940 (in thousands)[a]

Occupation	*1870*	*1880*	*1890*	*1900*	*1910*	*1920*	*1930*	*1940*
B.1: Technical Professional Occupations								
Technical engineers:								
Civil engineers & surveyors					52.0	64.7	102.1	105.5
Electrical engineers					15.3	27.1	57.8	55.7
Mechanical & industrial engineers					14.5	37.7	54.4	95.3
Chemical, mining, & metallurgical engineers					6.9	6.7	12.0	21.4
Total: technical engineers	7.1	7.1	28.2	43.2	88.8	136.1	226.1	277.9
Chemists, assayers, & metallurgists	.8	2.0	4.5	8.8	16.3	32.9	47.1	60.0
Architects	2.0	3.4	8.1	10.6	16.6	18.2	22.0	22.0
Designers, draftsmen, & inventors	1.3	2.8	9.4	18.9	47.4	70.7	102.7	111.8[b]
TOTAL	11.2	15.3	50.2	81.5	169.1	257.9	398.0	471.7

[a] Compiled from Sixteenth Census of the United States, 1940, Population, *Comparative Occupation Statistics for the United States, 1870–1940* (Washington, 1943), Tables 2 and 8. Figures for 1870–1930 pertain to workers 10 years old and over, while figures for 1940 refer to those 14 and over.
[b] Designers and draftsmen only

Size of the Labor Force in Selected Technical and Manual Occupations (*cont.*)

Occupation	*1870*	*1880*	*1890*	*1900*	*1910*	*1920*	*1930*	*1940*
B.2: Metal and Allied Trades								
Blacksmiths								
Forgemen & hammermen	145.0	172.7	209.6	226.5	235.8	197 9	125.1	87.2
Boilermakers					7.2	26.2	23.1	
Plumbers & gas & steam fitters	7.0	12.8	21.3	33.0	44.8	76.1	50.5	32.9
Machinists	11.2	19.4	61.2	97.8	158.2	214.1	243.7	216.1
Mechanics	55.1	101.1	186.8	283.1	461.3	841.4	653.9	521.1 [c]
Loomfixers						281.7	638.3	949.7 [c]
Millwrights					13.3	16.0	19.2	24.7
Toolmakers, diemakers, & diesetters					17.4	37.7	42.0	43.6
Tinsmiths, coppersmiths, & sheet metal					9.3	55.1	78.8	96.9 [c]
workers					56.4	69.7	80.4	91.6 [c]
Molders, founders, & cutters					120.9	123.7	105.2	87.6
Electricians	.4	1.2	15.0	50.7	122.9	222.5	284.9	252.9 [d]
Total	218.7	307.2	493.9	691.1	1,247.5	2,162.1	2,345.1	2,404.3
Locomotive engineers					96.2	109.9	101.2	72.4
Locomotive firemen					76.3	91.3	67.0	48.8
Stationary engineers	34.6	79.6	139.7	223.5	231.0	242.0	256.0	200.0
Cranemen, hoistmen, etc.						37.8	60.8	120.1
Firemen, exc. locomotive & fire dept.					111.2	143.8	127.3	127.4
Others, machinery					14.0	24.6	31.2	39.5
Total	34.6	79.6	139.7	223.5	528.7	649.4	643.5	608.2

SIZE OF THE LABOR FORCE IN SELECTED TECHNICAL AND MANUAL OCCUPATIONS (*cont.*)

Occupation	*1870*	*1880*	*1890*	*1900*	*1910*	*1920*	*1930*	*1940*
Operatives:								
Automobile industry					21.0	121.1	161.9	219.0 [c]
Electrical industries					24.6	64.8	117.3	152.5 [c]
Other iron, steel, & mach. industries					451.7	694.1	633.8	733.5 [c]
Metal industries, exc. iron & steel					69.7	91.2	91.8	80.5 [c]
Total: operatives					567.0	971.2	1,004.8	1,185.5
Laborers:								
Automobile industry					15.7	83.3	123.7	69.5 [c]
Electrical industries					11.4	26.7	36.9	29.8 [c]
Other iron, steel, & mach. industries					466.8	648.4	538.3	408.5 [c]
Metal industries, exc. iron & steel					44.7	67.8	62.4	45.1 [c]
Total: laborers					538.6	826.2	761.3	552.9

[c] Not comparable with previous years.
[d] And power station operators.

SIZE OF THE LABOR FORCE IN SELECTED TECHNICAL AND MANUAL OCCUPATIONS (*cont.*)

Occupation	*1870*	*1880*	*1890*	*1900*	*1910*	*1920*	*1930*	*1940*
B.3: Building and Woodworking Trades								
Cabinetmakers	43.3	50.7	35.9	35.6	41.9	46.5	59.6	58.8
Laborers & operatives in furniture factories					68.3	91.0	115.0	109.0
Pattern & modelmakers	4.0	5.8	10.3	15.0	23.6	27.7	29.8	33.0
Carpenters	365.8	390.6	618.2	600.3	823.2	892.2	933.5	773.6
Brick & stone masons & tilesetters	90.8	102.5	160.8	160.8	171.5	136.5	173.3	141.7
Plasterers	23.9	22.1	39.0	35.7	48.3	38.8	70.7	52.9
Roofers & slaters	2.7	4.0	7.0	9.0	14.4	11.9	24.0	32.7
Painters, glaziers, etc.	87.5	130.3	222.2	277.5	340.0	327.1	531.6	450.3 [e]
Paperhangers	2.5	5.0	12.4	22.0	26.0	19.6	28.6	30.0
Structural iron workers					11.4	18.8	29.0	38.6 [e]
TOTAL	620.5	711.0	1,105.8	1,155.9	1,568.6	1,610.1	1,995.1	1,720.6

[e] Not fully comparable with other years.

SIZE OF THE LABOR FORCE IN SELECTED TECHNICAL AND MANUAL OCCUPATIONS (*cont.*)

Occupation	*1870*	*1880*	*1890*	*1900*	*1910*	*1920*	*1930*	*1940*
B.4: Printing and Allied Trades								
Compositors, linotypers, & typesetters					127.6	140.2	183.6	174.3
Electrotypers, lithographers, & stereotypers					12 5	13.7	16.7	30.8 (Electrotypers and Engravers combined)
Engravers [f]					14.0	15.0	19.4	
Pressmen & plate printers					20.1	18.7	31.2	35.8
Apprentice printers & bookbinders					12.4	16.6	10.9	10.0
Operatives & laborers					64.2	74.7	81.7	84.5
TOTAL	50.0	86.6	146.9	185.4	250 8	278.9	343.5	335.4
B.5: Textile Industry								
Operatives, exc. dyeing, finishing, & printing	244.4 (Operatives and Laborers combined)	352.9 (Operatives and Laborers combined)	454.1 (Operatives and Laborers combined)	559.1 (Operatives and Laborers combined)	670.2	774.7	818.7	937.7
Laborers, exc. dyeing, finishing, & printing					77.0	142.7	117.9	90.6
Dyers	8.7 (Dyers, Operatives and Laborers combined)	13.6 (Dyers, Operatives and Laborers combined)	20.9 (Dyers, Operatives and Laborers combined)	28.3 (Dyers, Operatives and Laborers combined)	14 1	15.1	17.7	24.9
Operatives, dyeing, finishing, & printing					16.4	17 7	19.6	26.1
Laborers, dyeing, finishing, & printing					9.9	10.6	7.6	5.9

[f] Includes engravers not working in the printing industry.

Size of the Labor Force in Selected Technical and Manual Occupations (*cont.*)

Occupation	*1870*	*1880*	*1890*	*1900*	*1910*	*1920*	*1930*	*1940*
B.6: Clothing Industry								
Dressmakers					455.3	238.5	160.0	165.0
Tailors & tailoresses					204.6	192.2	169.3	118.8
Operatives					340.6	409.4	534.5	690.5
Laborers					15.3	12.8	10.2	12.4
Total	275.8	457.0	751.3	897.8	1,015.8	852.9	874.0	986.7
B.7: Occupations in Production of Shoes								
Shoemakers & repairers (not in factories)					69.5	78 8	76.3	65.6
Operatives (in shoe factories)	172.8	194.0	214.5	208.0	181.0	206.2	209.9	221.8
Laborers					10.2	19.2	18.3	11.6
Total	172.8	194.0	214.5	208.0	260.8	304 2	304.5	299.1
B.8: Beauty Industry								
Barbers, hairdressers, & manicurists:								
Male	23.1	41.9	82.1	125 5	172.9	182.9	261.0	221.1
Female	1.5	3.4	3.7	7.2	22.3	33.2	113.1	218.1
Total	24 6	45.4	85.8	132.8	195.2	216.2	374.2	440.1
B.9: Drivers								
Chauffeurs, truck & tractor drivers					45.8	285.0	972.4	1,339.8
Draymen, teamsters, & carriage drivers	83.3	119.1	246.2	361.8	443.8	420.2	111.2	[g]

[g] Not classified.

SIZE OF THE LABOR FORCE IN SELECTED TECHNICAL AND MANUAL OCCUPATIONS (*cont.*)

Occupation	*1870*	*1880*	*1890*	*1900*	*1910*	*1920*	*1930*	*1940*
B.10: Clerical and Commercial Occupations								
Clerical:								
Bookkeepers, cashiers, accountants	38.8	74.9	159.4	254.9	486.7	734.7	930.6	931.3
Clerks, exc. in stores	29.8	59.8	188.0	248.3	720.5	1,487.9	1,997.0	2,037.8 [h]
Stenographers & typists	.2	5.0	33.4	112.4	316.7	615.2	811.2	1,174.9
Total: clerical	68.8	139.7	380.8	615.6	1,523.9	2,837.8	3,738.8	4,144.0
Commercial:								
Retail & wholesale dealers	440.2	602.5	853.2	1,022.8	1,251.2	1,410.7	1,796.5	1,927.0
Commercial travelers, traveling salesmen, sales agents	7.3	28.1	58.7	92.9	163.6	179.3	223.0	623.6 [i]
Salesmen, saleswomen, clerks in stores	240.8	385.7	614.8	970.4	1,264.3	1,539.7	2,390.3	2,174.4 [j]
Total: commercial	688.3	1,016.3	1,526.7	2,086.1	2,679.1	3,129.7	4,409.8	4,735.0
TOTAL: clerical and commercial	757.1	1,156.0	1,907.5	2,701.7	4,203.0	5,967.5	8,148.6	8,879.0

[h] Includes office machine operators (64.2) and clerical and kindred workers (2,037.8).

[i] Distinction between commercial travelers, traveling salesmen, and sales agents not fully comparable with previous years.

[j] Includes shipping clerks (229.7); clerks in stores (525.6); salesmen and saleswomen, n.e.c., and commercial travelers (1,402.1).

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